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OCTOBER, 1947 25¢



Farmer Reports on the Flying Station Wagon . . . Page 21

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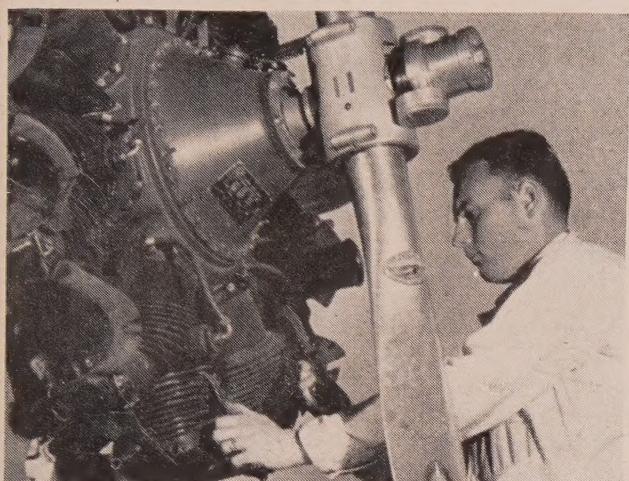
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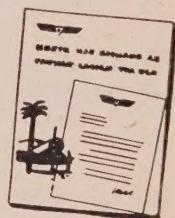
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The Birdmen's Perch

By Major Al Williams, ALIAS, "TATTERED WING TIPS,"
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.



Here are some bits of news we picked up in the last month.

Of course they're about our favorite subject—flying—and our favorite people —them as does it!

They put a solid brass model of a new jet job into a transonic wind tunnel and wound the wind up to 850 mph. The trailing edge of this solid brass model melted away like butter! (Make a note to keep your putt putt down to placarded speed.)

Another thing we note with great relief is that thunderstorms are not as bad as most pilots have thought. The Army's been digging out the secrets of these storms with specially equipped P-61's.

The big night-fighters flew through thunderstorm after thunderstorm, collecting data, and the weather pilots swear that they're nothing to be afraid of if you've got blind-flying instruments and are skillful in their use.

And here's one last bit:



The huge PB2Y which used to be used by the Fleet Admiral who promised to ride the Emperor's white horse through Tokyo is now carrying fresh fish from Alaska to U. S. points. Refrigeration is achieved by flying at 18,000 feet!

WHILE WE'RE ON FISH . . .

. . . take a fish. Any fish!

Scale him, and what have you got? You've got some fish . . . but you've got a lot of bone, too.

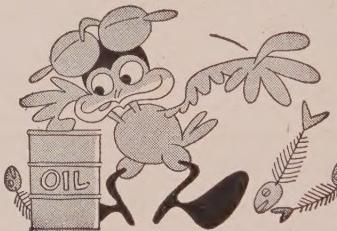
Take out the bone, and what have you got?

Nothing but tasty, nourishing fish!

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LITTLE KNOWN FACTS DEPT.

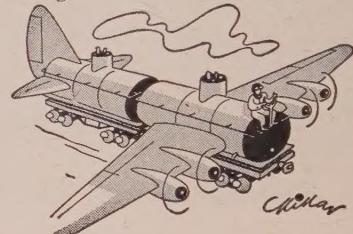
"Many pilots forget in emergencies that they can get the equivalent of an extra inch of forward or back stick pressure

by running their trim tabs all the way nose-up or nose-down!"

This Little Known Fact About Well Known Planes won a commission as Perch Pilot (bottom rung) for Charles A. Packard, 1321 Arch St., Philadelphia.

You can get a commission, too, if your Fact is as good as Packard's, and is accompanied with proof!

Here's another one, from right here in Pittsburgh:



"It takes 2 railroad tank cars to fuel the B-36—21,116 gal. fuel; 1,200 gal. oil!"

That was from T. W. Janssen, Jr., of 6314 Saint Marie St. His commission as Perch Pilot (br) is on the way.

That's all there is to it, fellahs. You send in your "Fact" on a post card or in a letter, enclose *proof*! —and if we use it you can join the elegant and exclusive order of Perch Pilots.

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Kodachrome: Stinson Flying Station Wagon

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There are two FLYING SPORTSMAN & SKYWAYS:
English and Spanish

OCTOBER 1947

VOLUME 6, NUMBER 10

The Henry Publishing Company publishes FLYING SPORTSMAN & SKYWAYS at 444 Madison Avenue, New York 22, New York. Advertising Offices: 444 Madison Avenue, New York 22, N. Y., 6 N. Michigan Avenue, Chicago 2, Ill. 816 W. 5th Street, Los Angeles 13, Calif. Gordon Simpson, West Coast Manager. James L. Cunningham, Chicago Manager.

Skyways Spanish Edition: Adolfo Guido Lavalle, Editor-Director, Lavalle 710, Buenos Aires, Argentina

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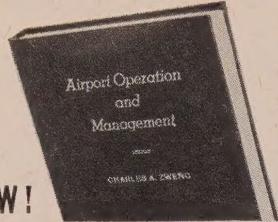
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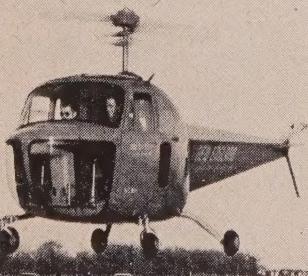
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AIR YOUR VIEWS

For More Plane Criticism

Dear Sirs:

I liked your report on the L-5. Not that I am interested in the L-5, but the comments on mountain and small-field flying were interesting. I also liked the criticism of specific planes. We need more critical articles on personal planes. While they have progressed tremendously, there is still plenty of room for improvement. I also like your educational articles, such as beach landings, and slips. In short, you have a good magazine!

DONALD R. HOLM

Richmond, California

Disappearing Airport

Gentlemen:

I was astounded to note on page 12 of your July issue that you called attention to the old Polk Grove airport. This airport has not been operative for some time. For the benefit of the flying trap-shooters, you could have pointed out that immediately adjoining the ATA grounds is Dayton Municipal Airport with four 5,000-foot runways, and one of 5,500 feet, adjoining turf strips, control tower, landing lights, radio not required, no landing fees, ample tie-down space, hangar facilities, excellent service from several operators, and the like.

JOHN E. COLEMAN

Dayton, Ohio

We checked in several airport directories, which listed the Polk Grove airport as operative, before we wrote the article in question. Apparently Directors of the directories have not been out that way for some time. Thank you for bringing us up to date on this field . . . and we hope no pilot stretched his gas to reach this nonexistent airport! We appreciate hearing about the facilities at the Dayton Municipal field. It is good to hear of a municipal airport that welcomes the private flyer!—ED.

Wanna Join?

Dear Sirs:

Your magazine, by publishing our letter requesting members, was instrumental in the organization of, I believe, the only flying club in Brooklyn. We bought and paid for a Cub and enjoyed many hours of flying in it at \$3.00 per hour. We are now ready to form another club, this time with Champion on floats. We have five members, and need five more. Safety, both in the air and on the water, is the key-note of this new club's constitution. We believe many people, both men and women, in this area would be interested in joining such a club, and that our club will do much to encourage flying.

ARNOLD FRIEDMAN

Brooklyn, N. Y.

We shall be glad to forward to Arnold the names of any readers who are interested.—ED.

Not the Only One

Gentlemen:

In the report on the BT-13 in the July issue, the author wrote the opinion that probably no other pilot ever soloed a 450-hp plane of that weight with a total logged time of less than 52 hours. Perhaps Mr. Arentz would be interested to know that I soloed a much heavier and much more powerful airplane in a little more than half that time. On May 18th of this year, I soloed my own AT-6 (600 hp) with a total logged time of 28 hours and 45 minutes.

JOHN L. CRONE

Dayton, Ohio

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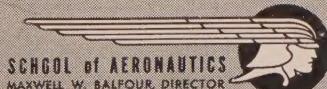
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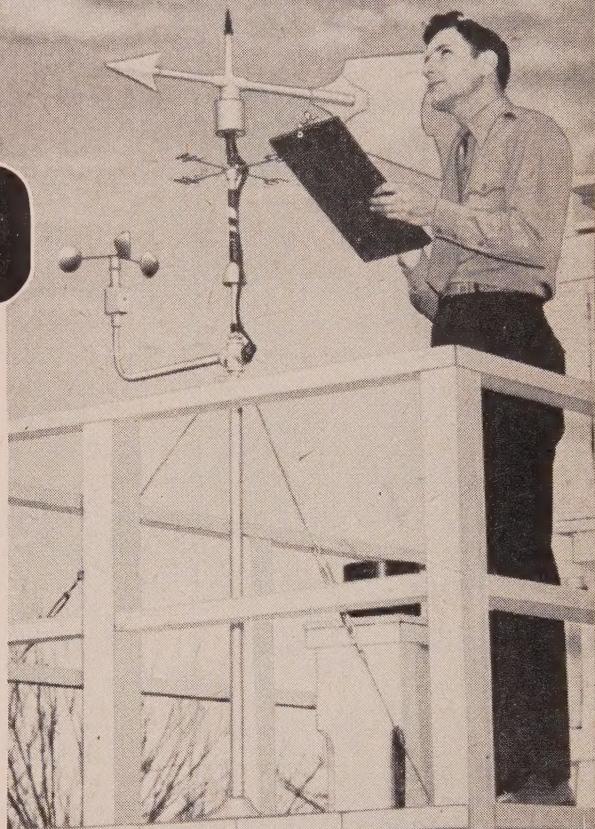
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in

NOVEMBER ISSUE

PROP WASH

Aero Oddities

Teamwork. On final approach of student check-ride, Instructor spotted field's busy runways, cautioned the student to use brakes alternately, if and when needed. Near end of landing roll, taxiing Stearman loomed up ahead of student's plane. Obedient student jammed on left brake, anxious instructor got on right brake, helpless plane went up on nose. (Lt. H. H. Sears, Pensacola, Fla.)

What's in a Name. Pan American's Clipper *Flora Temple* (N. Y. to Johannesburg, 44 flight hours) was named for famous sailing clipper *Flora Temple* (N. Y. to San Francisco, 129 days) was named for racing mare *Flora Temple* (two miles in 5:52:25), (B. R. Snyder, Beachwood, N. J.)

Grounded. Olympia, Washington pilot Abe Zaha went on fishing trip via seaplane to Packwood Lake. Weather closed in en route, and gasoline ran low. Pilot Zaha landed float-equipped plane on grassy strip at Chehalis airport, gassed up, took off again. (H. Clifford, Tacoma, Wash.)

Trespassing. When airport manager W. Lovett of Elkton, Md., complained to neighboring farmer that his cows were constantly wandering through fence onto airport's runways, the farmer reported his cows couldn't be kept in. To Lovett's question, Why?, farmer replied, "Yer planes fly so fast and low over the fence that the fence posts are bein' pulled out of ground by suction." Lovett's planes are Piper Cubs! (L. S. Gibson, Jr., Wilmington, Del.)

Walking Bird. Forced down by thick fog, *Cub* pilot landed on highway, started taxiing down it, hopped over several cars and Greyhound bus, finally pulled into auto entrance of Hinesville Airport after 8 miles "on the road." (A. Belt, Shanks, W. Va.)

Forced Landing. Pilot John Post and

a passenger were caught in a storm while flying over mountainous terrain in the west. Only flat surface in sight was 3,388-foot bridge. Pilot Post circled bridge, attracted attention of motorists who stopped their cars and blocked off both ends of span for runway. Then Pilot Post brought his small plane down to a safe landing on the narrow span. (Mrs. L. Cross, Wichita, Kansas.)

Blind Luck. Private pilot in Aeronca Chief flew to neighboring airport to see an AAF air show. Noticed some air activity, but flew through it to land safely at field. Few minutes later, six P-51 pilots approached private pilot, reported their dogfight had been fun and suggested he join in their struggle again sometime. (J. Dutch, Aberdeen, South Dak.)

Winged Battle. Preparing to start engine of patrol plane, two mechanics were attacked by swarm of hornets at home in ship's intake. Mechanics retreated, then made flanking attack and defeated enemy by giving them quick freeze with CO₂ bottle. (H. Haddad, Wickford, R. I.)

Flying Oven. On take-off from Canastota Airport (N. Y.), Instructor-Pilot Richards noticed odor of cooking meat. When he landed his Luscombe *Silvaire* 30 minutes later, Pilot Richards found a well-cooked bird in his plane's manifold cowling. (D. Wilcox, Clockville, New York)

Att'n Readers:

If you have any news-note oddities pertaining to aviation, send them to SKYWAYS, Box 17, 444 Madison Avenue, New York 22, N. Y. Five dollars will be paid the sender of each "oddity" printed. Contributions cannot be returned unless accompanied by stamped addressed envelope. The decision of the editors is final.

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AN EDITORIAL

AT long last, Congress and the President have struck the shackles from the American Eagle. The Air Forces have been given separate status, on a par with the Army and Navy under the new Department of National Defense. After so many years of clipped wings, of being tied to the too-often pedestrian thinking of the Ground Forces, they are free to soar far and fast in the protection of this nation's way of life.

It is a moment for sober rejoicing by the men who have labored since the days of Kittyhawk to bring American aviation to full stature. It could probably not have been achieved if the threat of Russian aggression had not loomed so darkly on the world's horizons. On August 1, we celebrated the 40th Anniversary of the beginning of military flying. With all that has been accomplished during these four decades, the next 10 years should see developments so much more fantastic that today's planes will seem childish toys by comparison. There is cause for double satisfaction in the merger. The new freedom of the Air Arm is not opportunity for license—but opportunity to work within the frame of the Department of Defense as an equal partner with the Navy and the Army, where, if the philosophy already expressed by the new Secretary James Forrestal and by General Eisenhower and Admiral Nimitz is carried into action, we can, at last, hope to see pooling of resources, of ideas, of research objectives—all leading to economy and the most complete effectiveness of our national strength.

Historically, the effort for freedom of the Air Arm goes back to 1919 when the first recommendation was made by the President's Aviation Mission for a separate Department of Air Service, to be headed by a civilian Secretary, who would have jurisdiction over civil, military and naval aviation. Years brought wisdom as to the divorce of civil flying from the military, although with close coordination in matters which concerned security. Billy Mitchell's near martyrdom in the cause of air development made the continuing fight dramatically popular, but the public soon forgot and Congress was still under the influence of the pressures of Service jealousies. The Morrow Board, in 1925, succeeded in gaining organization of the Bureau of Air Commerce and the formation of the Air Corps in a stronger position within the Army. Some 16 other Boards and Committees investigated and reported in the period preceding the Second World War, many of them heavily in favor of separation. But it took the combination of the Russian threat and the need for econ-

omy to bring the desired end, so long in the constructive thinking of military men.

Now, the youngest Service is faced with the challenge to prove itself, in spite of drastic appropriation cuts, and a serious lack of trained personnel. Word has gone down the line from the Chief, Lt. Gen. Carl Spaatz, that there *must* be a 55-Group Air Force in being by January, 1948, "or else!" Those who saw the General in action overseas believe he will reach his objective, but it is going to be tough, uphill work.

Approximately 400,000 men and officers have been authorized by law—the total now stands at 310,000, of which 45,000 are officers. To fill the gap of 90,000 men in the few short months remaining of this year will require one of the most concentrated recruiting drives in history. Strangely enough, now that the Aviation Cadet Training Program has been reopened to civilian youths, and the Aviation Career Plan to those whose wish to enlist and train for specialist ratings in the ranks, there has been little response.

The Cadet Program offers pilot training, leading towards a commission and flying status. To qualify you must: 1) Be an unmarried male citizen and agree to remain unmarried during training; 2) between 18 and 26½ years old; 3) have the equivalent of two years of college or pass an educational test; 4) be able to pass health and mental tests; 5) live within the continental limits of the U. S. If you qualify, you are enlisted as an Aviation Cadet, to serve three years, unless your service is terminated sooner for some reason. On graduation, you receive the commission of Second Lieutenant and serve on active duty for six months, with the chance to stay in the Air Forces as a regular officer, if you wish, under present conditions.

The Aviation Career Plan offers to high school graduates between 17 and 34 years old, the opportunity to choose the course or courses they wish to study. Upon acceptance, and after 13 weeks of basic training, specialized instruction in the chosen field begins. Courses cover everything from maintenance to electronics, and advancement to noncommissioned status is possible for those men who prove themselves. In addition, under the new regulations, those who can qualify can become eligible for training as commissioned officers. Of the 45,000 officers now in the AAF, 50 per cent are pilots, 12 per cent are other air crew (navigators, radio, bombardiers, engineers) and 38 per cent non-flying.

Air Force Commands now include: Strategic, Tactical, Air Defense, Air Material,

Training, Transport, the Air University and the Air Proving Ground. With the tremendous increases in research and development, particularly into such subjects as electronics, rocket and jet propulsion, and guided missiles, an entire new field has opened up for the men who want to have a part in the world of the future.

At the time of writing, Lt. Gen. Hoyt Vandenburg, Deputy Commander of the AAF, heads a Board which is carrying out a vigorous re-examination of the entire organization. When Secretary Forrestal calls for the plans for the new set-up, they will be ready.

In the meantime, General Eisenhower has ordered the Army to continue to service and cooperate with the AAF in every detail until it is able to stand alone. Such a spirit is in keeping with the will to eliminate past frictions and create an actual inter-service *esprit de corps* which can prevent repetition of the old-time battles for supremacy. After all, whatever the uniform, they are all American. In view of the tragic necessities of these days of unquiet "peace," and the dreadful implications of what a third World War would mean, such unification in spirit as well as fact is the least we can expect and demand of our defense forces. The strength of such union, even under the stringent economies imposed by the Congress, can well mean the difference between real peace and an atomic war. The importance of a free, untrammeled Air Force cannot be overestimated. The time has come in the annals of the nations when it can well be said, "By their wings ye shall know them."

The challenge is plain to every young man who has an interest in aviation. The opportunity for a free education in the science of flight, almost prohibitively expensive if privately bought; of contact with the finest equipment in the world, much of it unavailable to civilian students, is exceptional. Even if the officer or enlisted man returns to civil life at the end of his comparatively short period of required service, he will be in a far better position to make a professional career for himself than would otherwise be the case. Once again, it becomes the job of the average citizen to take upon himself the duty of supporting the men in uniform in doing their job. If General Spaatz is to be able to achieve his objective of the fully manned and equipped minimum of 55 Air Groups by the first of the new year, then the country for whose safety he is laboring must rally to his support. Once again, let's "Keep 'Em Flying!"

J. FRED HENRY

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Your Plan
for
Progress*

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APPROVED
FOR VETERANS



Where to Fly

CANADA

Probably no area in the world has made greater use of the airplane than Canada. Combine that air-mindedness with Canada's innumerable facilities for the sportsman flyer and you have a veritable flyer's paradise.

If you fly your personal plane into Canada, remember to do so via established Airports of Entry. Also make sure Customs officials at that port of entry have been advised of your ETA. Be sure, too, your ETA is within the operating hours of the Customs officers. To be on the safe side, consider 9 AM to 5 PM the established work day of the Customs Officers at the various airports of entry.

"The pilot of the visiting aircraft must show his aircraft registration certificate, airworthiness certificate, log book and air screw certificate." It'd be a good idea to have your birth certificate with you, too . . . just in case. With all these in order, the Canadian Customs official will issue the pilot a Permit Form C-15 for a period not exceeding three months. Don't lose this form! On subsequent landings in Canada, prior to final departure, no report to Customs is necessary provided the pilot has this form C-15 in his possession. The pilot will surrender it to the Customs officer when he leaves Canada.

Flying sportsmen heading for Canada would do well to write for condition of airports and seaplane bases (District Inspector, Southern Airways, Dept. of Trans., 4 Hughson St. S., Hamilton, Ontario), and air regulations and traffic rules (District Inspector, Air Regulations, 1 Montgomery Ave., Toronto, Ontario). Another handy booklet to have is called "Flying Facts about Ontario." Write Dept. of Travel & Publicity, Parliament Bldg., Toronto. This will give you detailed information about air-touring Canada, airports, etc. It would be a good idea, too, to write for a booklet explaining Canada's hunting and fishing regulations, license fees, etc.

ONTARIO

This Province of Canada, twice as large as the state of Texas, is one of the dominion's best all-year-round vacation spots. Offering good swimming, boating, fishing in the summer, and skiing, hunting, hockey, etc., in the wintertime, Ontario lays justifiable claim to almost every kind of outdoor sport.

One popular place is Lake of the Woods near Kenora, Ontario. The Metcalf Camps there are located in the heart of one of Canada's best hunting and fishing areas. Quarters are good, food is excellent . . . and the fishing is something you'll never stop talking about. And there's swimming, hunting, boating, etc., too. Write Mel Stinchfield, Valparaiso, Indiana, for details.

Probably one of the best vacation places for pilots who want to fly their own planes to Canada is Gravenhurst. The Doherty Air Service of Muskoka, Ltd., not only will look after your plane but it will also fly you to other vacation spots further north. Doherty Air Service provides good accommodations, home-cooked food at their Aero Lodge, outdoor swimming in their pool, and tennis or badminton. Doherty is operated by a group of ex-service men for the air-tourist trade.

Another excellent vacation spot is in the North Bay district. The Trout Lake Lodge, Trout Mills, is the flyers' stop-off-and-stay spot for this section. It's from the Trout Lake Lodge that you'll go roughing it back in the bush country. Guides are available for hunting; the summer fishing is excellent; and for those who like skiing, winter in this area offers a skier all the skiing he can take. Trout Lake Lodge is particularly anxious to entertain flyers. The airport for Trout Lake Lodge is within a few miles of the lodge itself. (See airport listing "North Bay Airport" for details.)

Still another excellent fall vacation place for flying sportsmen is Pine Beach Lodge on Vermilion Bay in southeastern Ontario.

Personal Plane Information:

Vermilion Bay Airport—Vermilion Bay (Operated by Canada's Dept. of Transport) Turf landing strip, NE/SW, 3,900 feet. Fuel, service available.

Kenora Airport—Kenora (Operated by Dept. of Transport) Turf landing strip NE/SW, 3,500 feet. Fuel, service, Custom facilities available.

Kenora Seaplane Base—Kenora (Operated by Ontario Provincial Air Service) Will refuel aircraft if pilot carries Imperial Oil credit card. Anchorage restricted. N/S miles.

Kenora Seaplane Base—Kenora (Operated by Canadian Pacific Air Lines) Landing area NE/SW, 2 miles.

Hudson Seaplane Base—Hudson, Ontario (Operated by Canadian Pacific Airline) Landing area E/W, 5 miles. Fuel, anchorage, minor service available.

Sioux Lookout Seaplane Base—Sioux Lookout (Operated by Canadian Pacific Air Lines) Landing area N/S 2 miles.

Sioux Sea Base—(Operated by Ontario Provincial Air Service) Refueling restricted to holders of Imperial Oil credit cards. Landing area NE/SW 3 miles. Anchorage restricted.

Sioux Lookout Seaplane Anchorage—(Operated by Starrett Airway & Transportation Ltd.) Landing area NE/SW 3 miles.

Sioux Lookout Airport Sioux Lookout (Operated by Dept. of Transport) Turf strip SE/NW 2,800 feet. Service, fuel available.

North Bay Airport—North Bay (Operated by Dept. of Transport) Asphalt runway NE/SW, 4,850 feet. Fuel, Customs facilities available.

Muskoka Airport—Gravenhurst, Ontario (Operated by Dept. of Transportation) Turf runway NE/SW, 3,100 feet. Hangars, fuel service, charter, training available. Lodging, food, sports available.

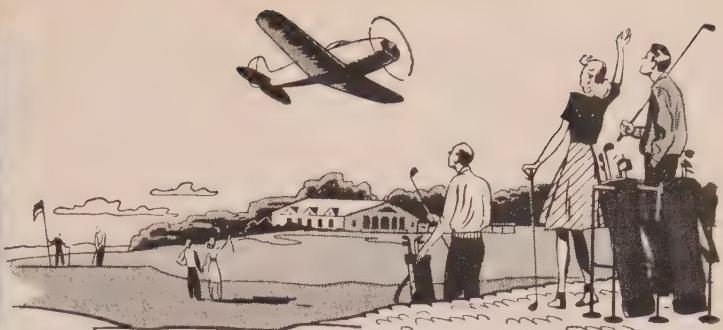
Trout Mills Seaplane Base—Trout Mills, Ontario (Operated by Northern Flying Service, Ltd.) Landing area E/W 1.4 miles. Fuel service available, anchorage. Charter service to other points available.

Write to the Surveyor General, Legal Survey & Map Service, Labelle Bldg., Ottawa, Canada, for Canadian Aeronautical Chart (25 cents each)—Ed.

Editor's Note:—Airport information supplied in the "Where to Fly" columns is to be used as supplementary material only. For detailed information we suggest that you consult CAA's *Airman Guide*. We invite your criticism and correction of any errors that might occur. Your help will help us to provide personal pilots with accurate and necessary airport data.

STANDARD OF CALIFORNIA'S

PLANE FAX



A page of service tips for private flyers and fixed-base operators



How to avoid crankcase foaming

Moisture condensation in your aircraft engine increases crankcase foaming many fold. To avoid this possibility pilots should keep the oil level up to the full mark. In addition to minimizing condensation this practice will help keep oil temperatures lower. One of the many reasons pilots depend on RPM Aviation Oil is because its "defoaming" compound greatly reduces this trouble under all operating conditions.

"Take off" rating important in aviation fuels

The anti-knock characteristics of aviation gasolines are now rated under two operating conditions. In the past these fuels were rated only under cruising conditions, but octane rating during take off has been found to be important. Now, with Chevron Aviation Gasoline exceeding the anti-knock requirements at take off, pilots are assured extra performance when they need it most. Chevron Aviation Gasoline is perfectly balanced to give easy starting, fast take off and dependable protection aloft.



Proper instrument care pays off in safer flying



The proper care of aviation instruments is a simple and inexpensive precaution that pays off in accuracy at crucial moments. A suitable instrument lubricant is required for full protection. The anti-rusting ingredient in RPM Aviation Instrument Oil protects gyro and other instrument bearings from rust due to condensation often found with ordinary oils. That's why it's recommended for all instruments where rusting is a problem.



CHEVRON NATIONAL CREDIT CARDS are good at airports throughout the United States and Canada. Ask your Standard Airport Dealer in the West...or write to Standard of California, 225 Bush St., Room 1618, San Francisco 20, Cal.

Flying Sportsman News

MAINE AIRPARK BOASTS DEER AT ITS DOOR

New Type of Glare Shield For Pilots

A sun cap with a built-in glare-shield is the latest addition to the list of pilot aids. The cap itself is the ordinary type (with a visor) worn by pilots. But what makes it different is the glare shield, shaped like sunglasses without bows, which snaps under the visor. A hinge arrangement allows the shield to be adjusted into place when the sun or snow is bright, and provides for tucking it away along the visor on a dull day. The cap with shield is made by the Polaroid Corporation, of Cambridge, Massachusetts, and won for its designers first prize in Polaroid's new-product competition. The new cap should prove handy to pilots.

ARIZONA STATE AVIATION CONFERENCE

The 1947 Arizona State Aviation Conference will be held on Friday and Saturday, October 3rd and 4th, at Douglas, Arizona. The Arizona Airmen's Association recently accepted an invitation to hold their October meeting in conjunction with the State Aviation Conference in Douglas. It is expected that all aviation interests in Arizona will be represented at this meeting.

HUNTERS FLY TO TEXAS HUNTING GROUNDS



A HUNTING we will go . . . a hunting . . . etc., only today the hunter gets there via plane, in this case a Stinson Voyager. Scene is Col. Jack Lapham's Flying L Ranch, well-known air resort in Bandera, Texas. Col. Lapham recently took delivery on the 3,000th Stinson manufactured since the war. Texas boasts quail, deer for the hunter.

Airport operators put out welcome mat for visiting airmen

DECOYS FOR DUCK HUNTERS

Duck hunters selecting decoys for the coming season will do well to consider "Ariduk" made by the General Fibre Company, 1723 Locust St., St. Louis 3, Missouri. Ariduks come in five different types: Mallard, Pintail, Blue-Bill, Canvas Back and Black Dot . . . enough variety to satisfy most any hunter. Outstanding feature of these decoys is the hollow fibre lightweight body, with a solid molded fibre bottom. Gun shot will not sink them, in case they fool the hunter as well as live ducks, and they have anchor hooks already installed.

OLDEST AIR PASSENGERS

Probably the oldest passengers in the history of air transport were a pair of alligators which alligator farmer Bill Kimbrell, of Tempe, Arizona, recently brought from their lair north of Texarkana, Texas, to his 'gator farm at Tempe. The 350-year-old leathery passengers were flown in two twin-engine Cessnas by pilots Merrill Randall and Dave Hulet.

"Way up in the middle of Maine, five miles north of Brownville Junction, and off the Lewiston Chart, nestles Prairie Airpark. North of Prairie are woods, lakes, and more woods. It's really a jumping-off place for the flying sportsman who has heard and heeded the call of the wild. Prairie Airpark, itself, offers just about anything the pilot could desire. There are cabins, rooms, a restaurant, and even a roller-skating rink on the field. There are three streams full of brook trout within a five minutes' walk from the field. And for the hunter, deer are so plentiful that you can shoot them from your window if you're feeling lazy. Actually Prairie Airpark is right in the heart of some of the finest fishing and hunting country to be found anywhere in the States.

What's more the boys who operated the airpark guarantee to take mighty good care of your aerial buggy while you dash off to that spot of hunting or fishing, or just plain hiking, if you prefer.

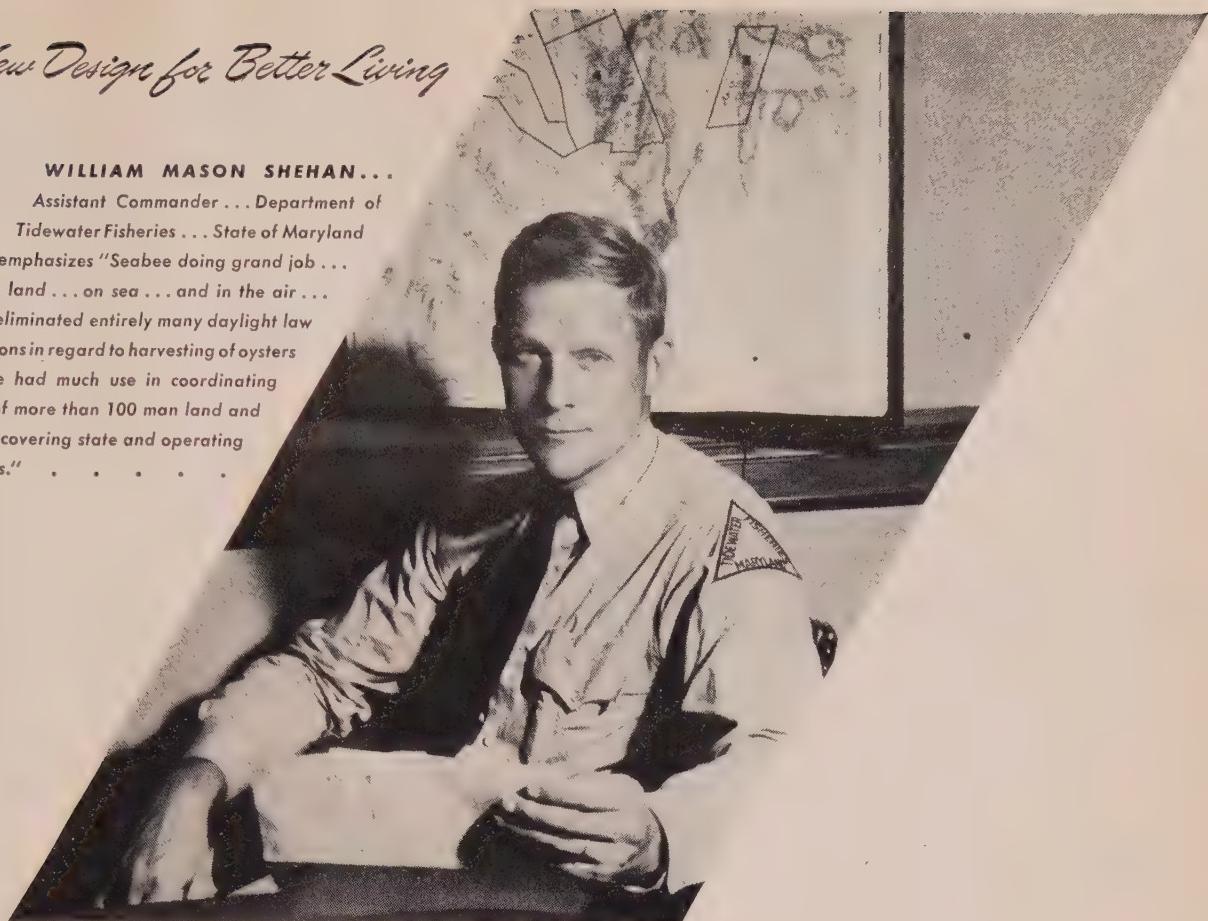
HUNGRY HUNTER'S DILEMMA

Here's a tip for the hungry hunter who lets the cook at home, or who, perhaps, is wounded to see his prize bag dried to a leathery mass by certain feminine cooking methods. In other words, how to cook that duck you shot. In the first place, every hunter ought to know before he ever loads a gun, that ducks should be drawn as soon as possible. A clean pickin' job can be done by dipping the duck in hot paraffine. With a few slices of onion inside the ducks can be left for several days. The cooking process itself is actually quite simple and we can't understand why so many people come up with less than the best. Just wash the duck with salt water, rub with bacon fat and stuff. A mouth-watering stuffing can be made from carrot, onion and celery and green pepper, wild rice or barley, all in about equal parts, seasoned, of course, with poultry seasoning or whatever you prefer. Cover the outside of the duck with paprika, put in the roaster, breast side up, and shove it into the oven while it's going up to 450 degrees. When the breast is browned, turn it over, and cover. At the end of an hour turn down the heat to 350 degrees. Pour the juices in the pan over it whenever it looks as if it's getting dry. Time for roasting will depend on size and number of ducks—probably two hours, or less. If you want your ducks to taste as good at dinner as they looked from your blind, then you'd better at least supervise the cooking job, and if you really want to follow through, then do it yourself! A flying hunter offered this recipe, so it must be good.

New Design for Better Living

WILLIAM MASON SHEHAN...

Assistant Commander . . . Department of
Tidewater Fisheries . . . State of Maryland
emphasizes "Seabee doing grand job . . .
on land . . . on sea . . . and in the air . . .
has eliminated entirely many daylight law
violations in regard to harvesting of oysters
. . . Have had much use in coordinating
activities of more than 100 man land and
water force, covering state and operating
30 patrol boats."



**"For Business . . . or Sport
nothing compares with this VERSATILE amphibian"**

Used by the Tidewater Fisheries for survey work
and patrol . . . Flying from and to the labyrinth of
waterways on Chesapeake Bay, the Seabee proves its
sterling efficiency in another exacting task . . .

Rough, tough, take-offs with four passengers and
full fuel loads are the daily chore . . . and the
rugged hull and powerful pusher have earned
highest praise from critical Pilot Shehan . . ."A sound
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DeLuxe **Seabee** 
A PRODUCT OF REPUBLIC AVIATION
Makers of the Mighty Thunderbolt



CARGO, everything from anchors to zippers, is in almost every case delivered to Alaska via air



OLD PLANES, with low landing speed, cargo space, are preferred by Alaska bush pilots. New ships land too fast



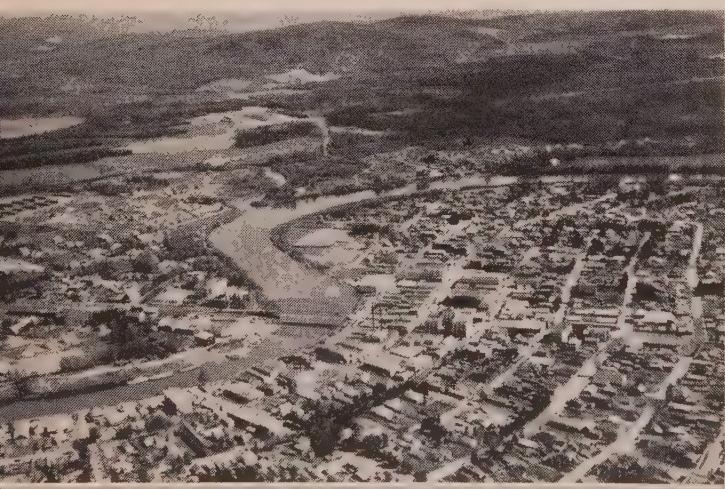
FLOATPLANES, many of them Cubs and similar two-seaters, are a main means of travel in Alaska

Alaska Bush Flying

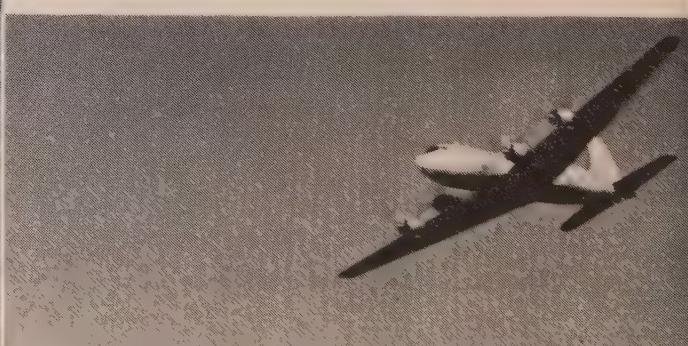
AVIATION in Alaska is coming down to earth. It's still a world of its own for pilots—a dynamic, sprawling frontier where tiny timber-fringed clearings, shifting sand bars, mountain slopes and twisting ribbons of ice are called "air-fields." It's a land where tough old-time bush pilots shrug off "normal operations" which would send a flyer in Texas or New York dashing to double his insurance before even setting foot in an airplane.

But the CAB and CAA are winning out. Veteran Alaskan pilots still remark casually, "Sure, we can cross the Pacific in a rowboat—hop in!" Today, though, they phone for a weather report first.

Yet it was only yesterday—in the 20's and early 30's—that a dozen or so keen-eyed youngsters from the States were flying their open-cockpit, fabric-covered airplanes northward and conquering again this rigorous frontier land which before had sub-



FAIRBANKS, a thriving city of 7,000, is base of most of Alaska's bush pilots. Aimmeddest region in world, more than 875 of every 1,000 in Alaska travel by air. Compare this with U. S.'s 28 out of each 1,000





RUNWAYS at Alaska airports aren't always concrete, and in wet season, landing gears "sink"



STIFF WIND toppled tree on Cub's wing. Owner Johnson (head in hands) made make-shift repairs, flew it home



CABIN in remote Alaska was built of materials flown in. Even man, his dog came via plane

mitted only to dog teams. Now the airplane was in.

In those days not a single prepared landing strip existed anywhere in Alaska. The Fairbanks airport was a race track. It had no lights. When Frank Pollock had to take off at night on his pioneer weather observation flights in the early 30's, he sent his mechanic with a flashlight to the far end of the field. In the inky blackness of one winter eve when the mechanic failed to appear, Pollock unknowingly took off across the runway instead of with it and carried as unscheduled freight a 12-foot pine tree draped across his skis.

Landings made in the bush area were always hazardous, and many of them were almost incredible. Noel Wien, another pioneer Alaskan aviator, recalls the most difficult landing in his 750,000 miles of Northland flying. During the summer of 1925, Noel was called into the bush to pick up a gold prospector stricken with pneumonia. Cruising over mountainous terrain in his Hissel Stand-

HUNTERS load up after a weekend of hunting few hundred miles from home. Flying sportsman no novelty here



By BRUCE A. WILSON

PROSPECTOR waves to plane that brought him in. Overland trip would have taken 2 months





OLD-TIME bush pilots such as Harold Gillam, killed in early 30's, flew good weather or bad; was usually bad



GOLD MINER, only 62 years old, decided to play it safe and learn how to fly. Here he pulls prop through



ESKIMOS up and down Alaska northern coastline and sub-Arctic tundra hero-worship Arctic-flyer Sig Wien

ard, Noel found it virtually impossible to select a safe landing place. What appeared to be solid ground actually was pockmarked with treacherous "chuck holes." Finally the former Minnesota farm boy swooped toward the mountainside. He hit ground at a 30-degree upward angle, stood on his brakes, and stopped in 200 feet. Three inches had been chipped off each end of the prop.

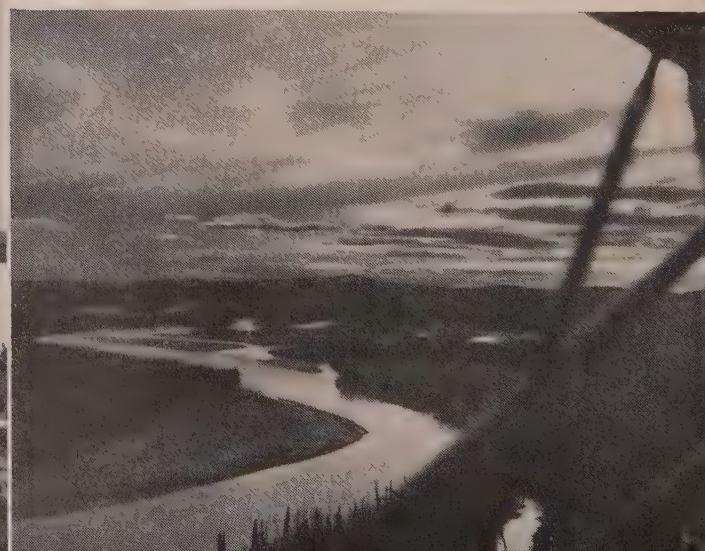
Noel unslashed his spare propeller and installed it. He loaded the patient aboard and looked around for a place to take off. There was none. Finally, with the aid of other prospectors, he pushed the plane to the top of the mountain, climbed in, and raced down the other side.

Noel had a 100-foot run before a jagged precipice dropped vertically. His plane staggered sickeningly, then began to climb.

Feats approaching that were almost commonplace during the early days of Alaskan aviation.

Weather reports generally were non-existent. Don Goodman of Anchorage used to cover the 340-mile run to Flat with his single-engine plane, one emergency landing field (which *(Continued on page 46)*

COUNTRY between Fairbanks and Canadian border offers only twisting Chena Sough, forests, mountains



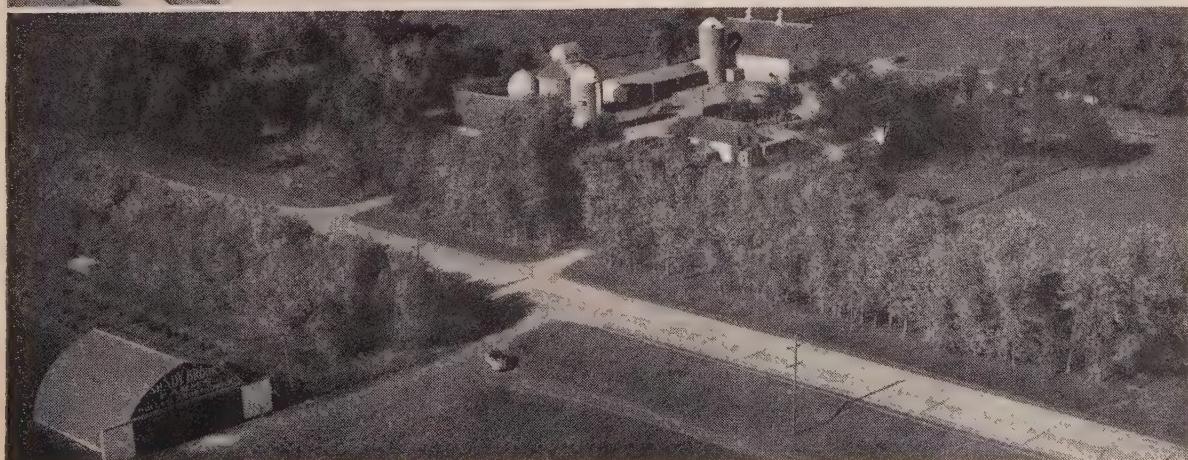
A FARMER'S PLANE

By BERT A. HANSON

***Farmer flies a Stinson,
calls it a useful addition
to farm equipment***

TODAY, with so many of our nation's farmers adding the airplane to the list of useful farm equipment, being a farmer is just another way of admitting you're a pilot. Of all the people who own and fly their own planes these days, probably no group gets more really good use of an airplane than farmers do. The problem of a place to keep a plane, and a place to take-off from and land on, is of no concern to the farmer. He can keep his plane in the barn, and he can fly his ship from one of his own fields. What's more just about every farmer has had to be a pretty good mechanic to keep his own farm machinery going, and that know-how comes in handy in taking care of a plane.

FARMER BERT HANSON (left), at controls of new Flying Station Wagon, uses alfalfa field as his airport





STINSON-MAN Bill Klenke shows Farmer-Rancher Hanson how much cargo his new airplane will carry X-C

As a dirt farmer and not too good a flyer, a newcomer to plane ownership, too old to enjoy stunt flying but young enough to enjoy the finer things of life, my reasons for wanting an airplane, and particularly a Stinson *Flying Station Wagon*, are important . . . at least to me.

First of all, considering the kind of flying I do, I had to have a really rugged airplane. The places I bring my ship into and fly out of can't exactly be called "airports," that is unless you can call small fields that are as rough as old cord roads airports. My home is in southern Minnesota and, fortunately for me, the ground I call home base



POLLED SHORTHORNS are a specialty on Hanson's farm. He uses plane to fly him out for cattle check



is a large alfalfa field. Between my alfalfa field and another field is a narrow drive that is perfect for take-offs. I use this drive when the alfalfa is so high it causes take-off trouble. But this is only about 4 or 6 weeks out of every year. Too, the field is so situated that we can always land into the wind, and that sets it up as being a safe field as far as my operations or anyone else's are concerned. But it isn't my home base that calls for rough-field operations, it's the other fields that I have to fly in to. That's where the Stinson's stamina really shows up.

Another thing I had to have in my airplane was power . . . and plenty of it. Only too well do I

CARGO SPACE aft of seats will take as much as 552 pounds of cargo, or two rear seats can be put in

remember, a few years back, when I learned the hard way that when you need power you can't substitute anything else in its place. Flying in and out of small rough fields calls for power just the same as it dictates a definite need for ruggedness of plane construction.

A third requirement was size and payload. I didn't want a plane that forced me to do all my air traveling alone. I wanted a ship big enough to take others with me and still allow me carrying capacity in the form of luggage or cargo.

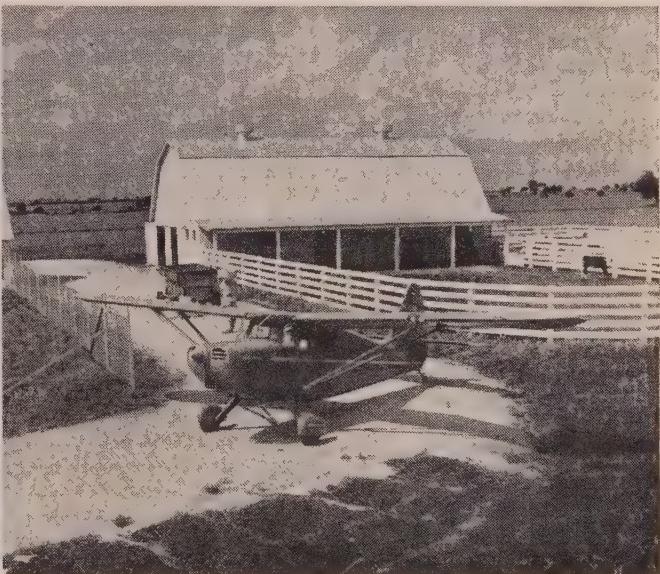
In addition to those needs, there was, of course, the necessity for a certain amount of speed, lots of safety and simplicity in operation, reasonable flying range and economy of operation . . . and all that at the price I could afford to pay. The Stin-

I've brought my ship through some pretty rugged weather and bad flying conditions but, throughout all of it, she handled beautifully and displayed a stability that made you feel as though you were really sitting in a bigger and heavier ship. You might say that as a lightplane, the Stinson compares with others the way today's Buick would compare with an old Model T Ford. In short, the ship is stable and doesn't bob around like a cork in troubled water. Too, the ship's 130-mph cruising speed makes your own state a lot smaller than you think it is.

As far as maintenance is concerned, my Stinson is as easy to take care of as an automobile. Since the day I took delivery on it (about three months ago), I've only had to change oil and put water in



FARMER HANSON, chatting with a friend, recently flew 600 miles to take an injured man to hospital



FARM OPERATOR in Texas, like Minnesota's Bert Hanson, calls his plane one of most useful farm items

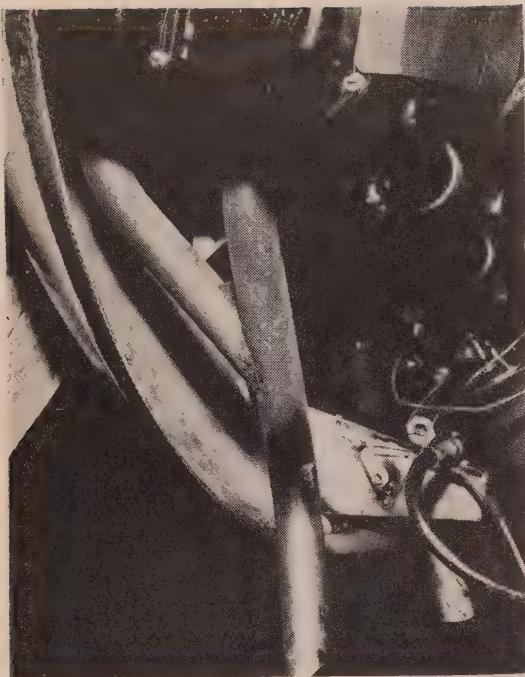
son *Flying Station Wagon* came along to fill the bill at just the right time. It's just what I or any other farmer would want in an airplane.

Many of you who never have been at the controls of a Stinson may wonder how it handles from a farmer's point of view. It taxies easily and without too much vaning in crosswinds. And when you turn it into the wind and ease the throttle full forward for take-off, it's a ready-and-willing-to-go airplane. You will be well above the field fence at the end of the "eighty" when you trim it for climb, and once at the desired altitude, you level it off, trim it for straight-and-level flight, and sit back . . . most of your flying work is now over until you're ready to land. If you have to come into a short field, or make a short take-off, the Stinson has the flaps necessary for both procedures.

the battery. However, the average American farmer never would find maintenance of an airplane, and particularly the Stinson, a problem. Motors are pretty dependable all around, and the manufacturers of today's airplane engines have added dual ignition, and that eliminates about 90 per cent of the motor failures on any farm machinery where clean gasoline is used. All in all, just a little horse sense is needed in maintaining an airplane the same as it is needed in anything else . . . and horse sense is something most farmers have a bit of.

As far as use of an airplane is concerned, I personally feel that the longer I own an airplane the more I'll use it. Since we do rather a sizeable amount of farm drainage with machinery in the surrounding territory, I've found that I can do a better job of check- (Continued on page 48)

A Check on the CHAMPION



CLOSE WATCH of exhaust stack "Y" is better kept with muffs off. Be on guard for signs of cracks

CHECK bottom of axle strut for marks that indicate whipping of brake cable that is too loose

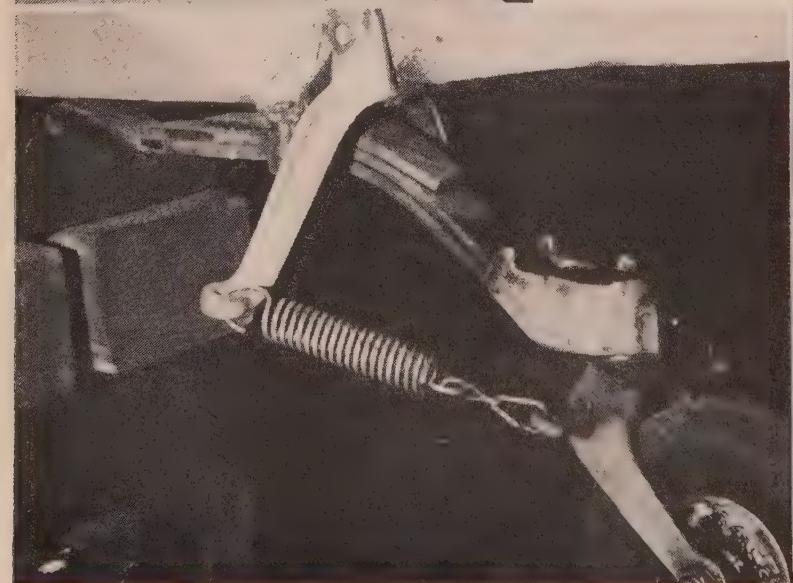


NO PLANES take more of a beating from flyers than the light tandem types like the Aeronca *Champion*, used in flying schools around the country. Susceptible to damaging errors of judgment by students, the training plane has to be inexpensive and easy to repair and, for the same reason of cost, has to be simple yet have enough instruments and equipment to make a training program as complete as possible. Filling these requirements also makes it eminently suitable for the Sunday flyer who has to stretch his purse to make it fit his hobby.

One of the important "musts" for the plane used in flight training is that it have comparatively few maintenance problems and these must be easy to take care of. It has to be a strongly built job to stand up under wear and tear, but its components cannot be too expensive. Stripping a wing by sideswiping a gasoline refueler does not come under the heading of normal deterioration, but not-too-costly repair of damage is a virtue of the welded frame, wood-spar, fabric-covered airplanes. Airplane maintenance is almost akin to another problem stated by one anonymous seer: "*Some planes are almost foolproof until some damned fool proves otherwise.*"

Well, as simple as the Aeronca *Champion* is, there are trouble-points that are worth a look-see, the (*Continued on page 50*)

KEEP WATCH on forward spring assembly bolt (bottom left) near block. It should be replaced at periodic. Grease zerk fitting twice daily. Watch for cracks in pitot line (below) under wing



**Preventive maintenance
is airplane insurance**

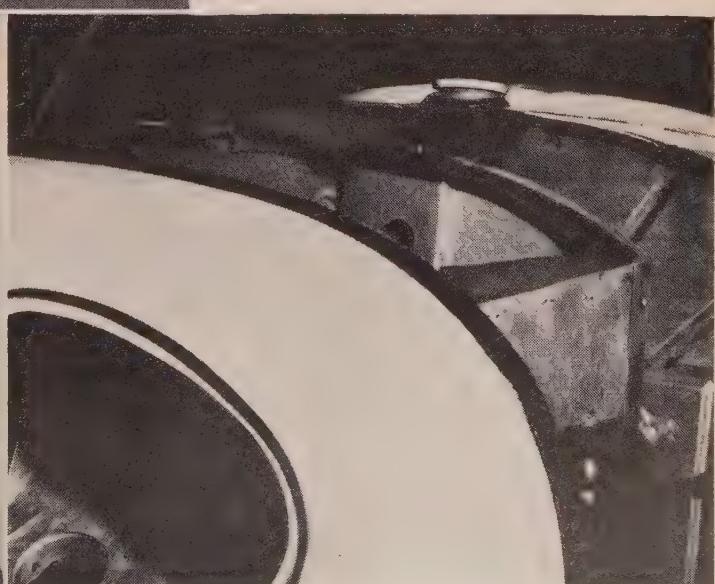


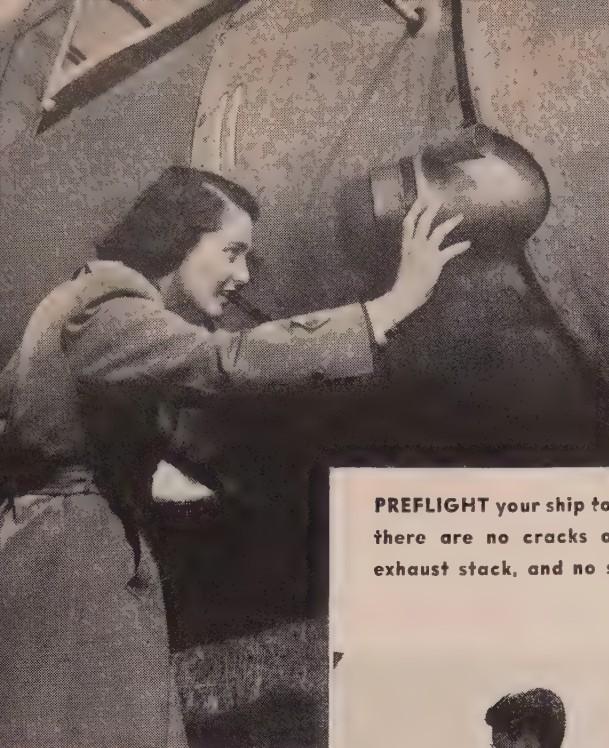
By JERRY LEICHTER

AERONCA CHAMPION is strongly built, therefore offers few maintenance problems. Replacements are easily made necessary

CHECK looseness between aileron control rod and bellcrank through lower inspection port

LEATHER BINDING makes seal between baffles and top cowl. Check binding to see that it is still pliable





PREFLIGHT your ship to make sure there are no cracks or leaks in exhaust stack, and no soot inside



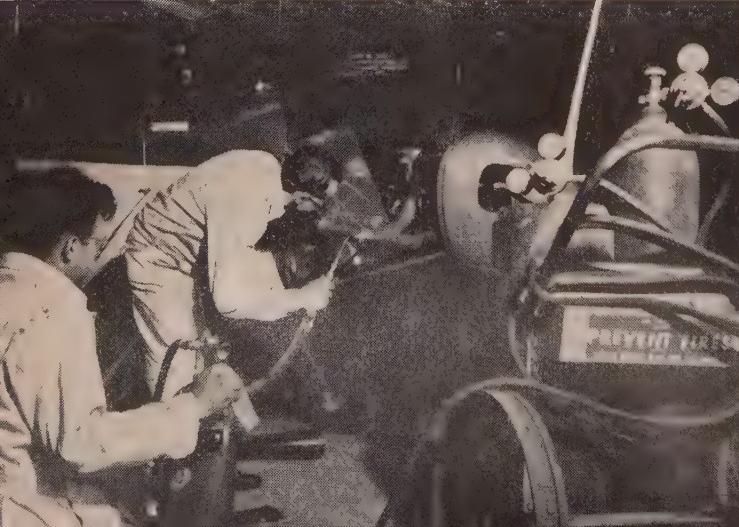
OIL, GREASE, grass and littered newspaper are fire-hazards if exhaust spark catches. Before starting engine, push your plane away from oil puddles, grease, grass, etc.



FUELING is routine, but be careful here, too. Good mech will ground fuel hose while you ground your plane. Also be sure attendant does not allow gas to spill over tank

WELDING calls for special precautions. Metal shields are set up against inflammable parts, and fire guard stands by with an extinguisher. See that lights are OK

MAPS, CHARTS, etc., should not be stored in baggage compartment, on seats and particularly not in compartment for flares. It pays to be orderly, neat in your plane



Plane Word

DURING a chat with the Aero Insurance Underwriters recently, it didn't take your reporter long to discover that in this problem of safety in personal aviation, one of the prime factors to be considered is fire prevention.

A good pilot may not want to do the dishes at home, but if he keeps his plane clean and in good shape you can call him a good housekeeper nevertheless, or in this case, a good "plane-keeper." And because he is a good plane-keeper, fire will not be one of the bugaboos to dog him. He won't let it.

The photographs shown here offer a lesson in airplane fire prevention. Taken under the supervision of Aero Insurance Underwriters, and posed by Miss Gloria Heath, a commercial pilot and special assistant to Aero Insurance's Chief Engineer, the pictures are worth some study on the part of



SMOKERS that are careless have caused many fires. Grind your cigarette out in metal ash tray. Don't snuff it out on floor, and don't toss a lighted butt out the window



STATIC electricity can cause fire. Wear leather-soled shoes, not rubber, and be sure to ground ship

o The Wise

the pilot-reader. That old "ounce of prevention worth a pound of cure" never had a better application than it does to personal aviation. Heed the ounce of prevention suggested here and keep the pound in your pocket . . .

Remember to push your plane away from oil puddles and grease when you're starting the engine. Get your ship off dry grass, too.

Don't let gas spill over when your tank is being re-filled, and a careful mechanic will ground the gas hose before he uses it. Check up on that.

If you must smoke while you're flying, use the plane's ash tray. Don't grind butt on the floor and, above all, don't throw it out the window!

These are just a few of the precautions noted in the pictures. Take all the advice Aero Insurance offers. It'll pay off for you. ++

FIRE EXTINGUISHER is not too effective for fighting fire while in the air, but it is darned handy to have around anyway. See that it's operative, easy to get from holder



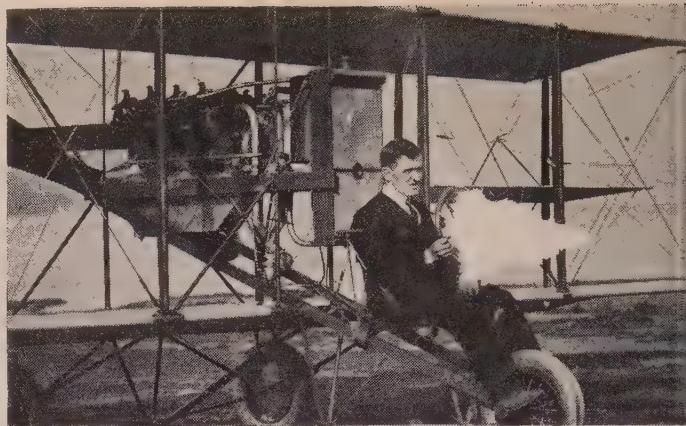
EXHAUST SPARKS like dirt. Be sure you wipe off any oil and grease that might have accumulated on your plane's belly. Carefully check this before starting the engine

FUEL LINES, carburetor and all fittings should be carefully checked before each flight. Fuel line failures are principal cause of fires, so be sure you look under hood





AERO LICENSE #25 went to Phil Parmalee (right). He, with Lt. Crissy (left), dropped first bomb from a plane



LICENSE #27 went to Lincoln Beachey, often called "man without nerves." He set 1911 altitude record



LICENSE #26 was awarded Frank Coffyn. During World War II, Coffyn learned to fly a helicopter



NAVY Lieut. T. G. "Spud" Ellyson was given License #28. He was the first Naval Officer to get a ticket



ARMY'S Lt. Milling was awarded Aero License #30 and Expert Certificate #3. He flew with Lt. Arnold

ARMY CAPT. B. D. Foulois (below left) was taught to fly by Frank Coffyn, was awarded Expert License #7





LICENSE #22 was given to J. C. Turpin (right) shown here with Lt. Milling. Turpin was a flight instructor



EXPERT LICENSE #6 went to Capt. Beck (far left) shown here with Arnold, Chandler, Milling, Kirkland

THE THIRTEEN

***Concluding early aviation series,
here are third 10 to get licenses***

By General of the Army H. H. ARNOLD

THE airplanes used for exhibition and other flying during the 1910 and 1911 period were quite crude, and their performance was not too "hot"; accordingly, the pilots literally had to be "supermen" to keep from killing themselves. As the pilots became more adept, and better planes were developed, the tests for pilots' licenses became easier. Originally, the license test called for:

1. Two distance flights on a closed circuit, each flight to be of at least 16,404 feet, without plane's

touching the ground any time during the flights.

2. One altitude flight, during which an altitude of at least 328 feet (100 meters) above the point of departure must be reached; the landing to be made in view of the observers, without re-starting the motor; a barograph to be carried.

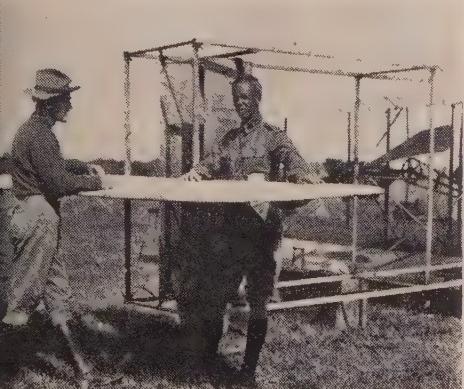
3. Candidate to be alone in the aircraft during these tests.

4. Distance flights to be made around two posts in figure 8's. (Continued on page 52)

1911—Lt. H. H. Arnold looks over a Burgess-Wright aeroplane at Dayton

1946—Gen. Arnold, Chief of Air Forces, lauds activities of WASPs

1930—Majors Arnold and Milling with 20 years of flying



A Week-end



POPULAR RESORT in High Sierras is Arcularius Ranch, 50 miles north of Bishop, Calif. It has landing strip mile long that is maintained by the Army to supply a nearby rest camp

Shangri-la

By DON DOWNIE

"IF IT hadn't been for the old PT, bless her, I'd have had to stay home this weekend," beamed the flying fisherman.

Many an old-fashioned fisherman in crowded Southern California stays home weekends because he can't spare the time for a 500-mile roundtrip by car to the High Sierras. But that's not true of the airminded anglers—and there are plenty of 'em—who use surplus trainers and postwar lightplanes to speed them to their favorite fishing hide-aways.

FLYER-FISHERMAN Dr. Richardson knows a good fishin' hole when he sees one, so Owens River is a favorite



FISHING GEAR such as boots, landing net, rod, etc., easily fits into the 60-pound luggage compartment

Typical is the quick trip to the Arcularius Ranch, 50 miles north of Bishop, California. Dr. Arthur Richardson, Pasadena City Health Department consultant, and Frank Davis, Vultee test pilot who made the original flights in the new XP-81, took off from a Los Angeles airport at 2 PM on a Saturday. Shortly after 5 PM their baited hooks were dangling in the upper Owens River. The trip, by car, would have taken over eight hours.

The Arcularius Ranch is but one of many High Sierra resorts with landing strips. Their gravel runway is over a mile long and is maintained by the Army to supply a nearby rest camp for Mather Field personnel. Serviceable fields are now open at Olancha, Monache Meadows, Lone Pine, Manzanar, Independence, Bishop, Convict Lake, Tunnel Meadows and many others. The former Army field at Bishop has two paved runways, one over 8,000 feet long. Here airplanes are used extensively as

flying pack mules, not only to transport sportsmen to isolated meadows far from highways but also to drop supplies to professional hunters and trappers who remain in the back country for weeks at a time. Many of the meadows now used as landing fields are dangerously small, but the present-day trend is to construct full-sized airports to take care of the long anticipated flood of flying sportsmen.

CRAWLEY LAKE, high in the Sierras, is another popular fishing spot that is accessible in few hours by plane

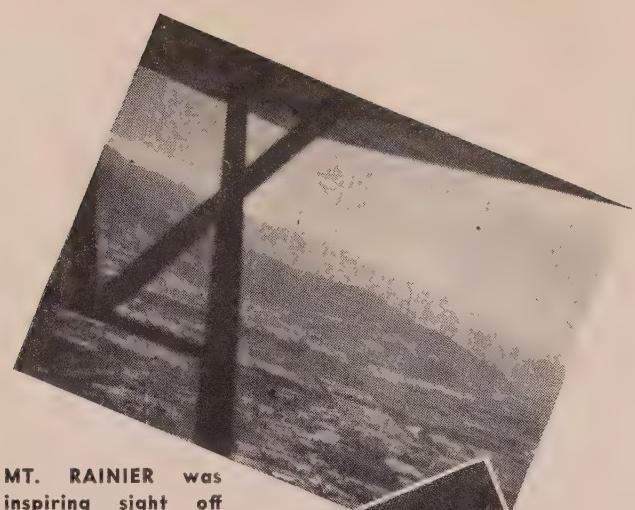


STILL WATERS of Crawley Lake lure test pilot Davis and Dr. Richardson to the Sierras on many weekends

A fisherman with only a Saturday-afternoon and Sunday holiday may now expand his potential hunting and fishing grounds four or five hundred miles from home without a nerve-wracking tussle with traffic. Too, the flying fisherman can try out many remote and relatively untraveled waters. The term "fly fishing" takes on new significance.



FLY the FAMILY



MT. RAINIER was inspiring sight off Super Cruiser's wing



VIEW of famed Niagara Falls was best when seen from air



TRIP took Scanlons over Mt. Rushmore out in South Dakota



GRAND COULEE Dam looked big even when viewed from up above

Airline capt. piles four in family plane for real X-C

FLYING is for the whole family . . . and that isn't just "copy" to sell airplanes or airline transportation. It's a statement of fact that one try-at will prove. We Scanlons just proved it by a 6,000-mile air trip in a three-place personal plane . . . and the Scanlons are four—3-year-old Paul, 6-year-old Phillip, my wife Sena, and me. We flew out to Seattle, Washington, and back . . . "back" being New York City . . . and my only complaint is that the family hadn't any more than hung up their hats on the home halltree before they began asking when they could go again.

With a Piper *Super Cruiser* at my disposal, friends and relatives on the West Coast and a family that likes to fly, I took advantage of a 30-day vacation from pushing *Constellations* around for Pan American by flying the family back home.

My reserved opinion is that no pilot should start out on a trip without first completely familiarizing himself with the plane he's going to use. Climbing out of the cockpit of a four-engine ship and into the small personal plane called for my conversion to "lightplane" flying. So before we left, I logged a few hours' experience flying around in the three-place *Super Cruiser*. Meantime Sena was logging about the same number of hours' experience packing a limited amount of clothing for the 30 days. She showed all the patience and virtues of a mechanic assembling an engine he had never seen before and, after a series of packings and repackings, she finally arrived at the perfect combination of all necessary items. She packed swim trunks, sweaters and extra trousers for the boys, two extra dresses for herself, night clothes, the four Scanlon toothbrushes and a towel and wash cloth or two. It proved to be all we needed or even wanted.

The Scanlons weigh something like 370 pounds,

By JAMES SCANLON



MOUNTAINOUS country of the West provided some slightly rough flying, but inspiring sights were worth a few bumps

and we managed to keep our luggage down to 50 pounds—this included a small suitcase, two zipper bags, my brief case, several maps (pilots—don't leave without them), and a special pocket-size tool kit that I rigged up for my own use in plane inspection and that important preflighting.

The kit proved a very useful thing, too. So if you're planning a trip similar to ours, I'd suggest you make up one for yourself. It contained two small screwdrivers—one a Phillips, a Chamois, a pair of diagonal cutters, safety wire, seven-inch wrench which fits almost all fuel-line nuts, and a few PK screws. For some reason fairing screws have a nasty habit of working loose on a few hours' flight so I made it a point to replenish the supply

of PK's all along the way. You'd better do it, too.

There are two other items that deserve mention here . . . one that we took along and one that we didn't. No one should take a vacation trip without a camera and we had ours along. I carried it with me in the front cockpit. Color shots from the air of Niagara Falls, the sculpture on Mt. Rushmore, Devils Tower, our home town: Missoula, Montana, Needles Highway, and many other sights . . . 120 good shots in all . . . are our prized possession now that the trip is over. But I didn't take a radio along. Can't say that I regretted it at any time, but I would recommend your including it as part of your equipment if you can stand the extra weight. If you know how to use a (*Continued on page 56*)

PAN AMERICAN'S Captain Scanlon, on proverbial busman's holiday, flew his family from New York to Washington and back in a Super Cruiser. Trip was fun, cost little and provided youngsters with plenty to talk about



BASIC FLIGHT

By LIB and WIL BIGLER

HAVING trouble with lazy flights? Forget them for awhile and put in a couple of half hours on straight-and-level flight, turns, climbs and glides. No affront is intended to anyone's aerial dignity. All flying is a combination of these four fundamentals; if you have not really mastered them, your advanced maneuvers will show it. Conversely, a real grasp of these fundamentals means that you can learn to do any maneuver of which you have a clear mental picture.

It is often said that flying is one of the hardest things there is to learn and one of the easiest to do. One explanation of this lies, perhaps, in the misconceptions often held by beginners. Many laymen have learned by now that an airplane will not take advantage of a split-second's inattention on the part of the pilot to dive crazily to earth, and few still believe that normal flight is maintained only by constant and violent manipulation of the controls. However, the myth of a mysterious sixth sense called "feel" still lingers alluringly around the birdmen, perpetuated, no doubt, by some of the birdmen themselves.

"Feel," or kinesthesia, to use its fancier name, is



certainly a sense just as are sight and hearing, but it is neither mystic nor reserved for a chosen few. Everybody has it to a certain degree, and it needs only to be developed and interpreted for use in flying. It's in your muscles and your joints and tendons; the blind often develop it to an extraordinary usefulness. Combined with vision and hearing, feel will keep you correctly apprised of your attitude and speed and will help you anticipate the tendencies of the airplane at any given moment.

It is interesting to note, however, that *feel* alone does not serve the pilot so well as the blind man. Quick or continued changes of attitude, causing half-interpreted, overlapping sensations, will soon give the "blind" pilot a completely erroneous impression of the plane's attitude.

Distrust of the airplane or lack of faith in one's own ability are responsible for much of the tension that handicaps many students in the early stages of training. Only a relaxed body can receive, and an easy mind interpret the sensations offered by the hands, feet and, among other regions, the well-known seat of the pants. Only the light touch of the controls can produce the shaded, timed am-

NORMAL CLIMB from straight-and-level requires coordination of back pressure on stick with throttle advance to keep rpm near constant as possible. Forward elevator pressure, throttle back, returns ship to level flight.

CLIMB

GLIDE

ordinated pressures that make for smooth flying. A misconception on the other side of the coin (and just as harmful) is the idea that all there is to know about flying can be learned in four or five easy lessons. Happily, such an impression is usually short-lived. For many a pilot, one of the joys of flying lies in the fact that there's always something more to learn.

Control functions are best understood by referring to the hypothetical axes of the airplane. Imagine the *longitudinal axis* (from nose to tail) as a long pencil. Another pencil crosses it at right angles to form the *lateral axis* (wingtip to wingtip). The *vertical axis* passes through their point of intersection (your old friend the Center of Gravity) at right angles to each. Now, imagine yourself seated in the CG with a stick in your hand and rudder pedals under your feet.

Movement around the longitudinal axis is controlled by the ailerons and is called *roll*. *Pitch* is motion around the lateral axis, governed by the elevators. The rudder controls *yaw*, or motion around the vertical axis.

Whether the airplane is in level flight, a steep climb, or an inverted spin, these basic *control functions* remain the same with reference to the three axes. Any confusion about this point probably comes from using in such a discussion the terms "up" and "down" with reference to the earth. A simple example: In a vertical bank to the left, right rudder pressure will bring the nose *up*—in relation to the earth—as the elevators do in level flight. But the rudder has not assumed the function of the elevators; it is still rotating the airplane around the vertical axis.

Stability. An airplane is "stable" if, when it is disturbed from a balanced condition of flight (whether level, climbing or gliding), its tendency is to return to that con-

(Continued on page 58)

IRNS, climbing or gliding, require the pilot to guard against skidding or slipping

LEVEL FLIGHT



GLIDING TURN

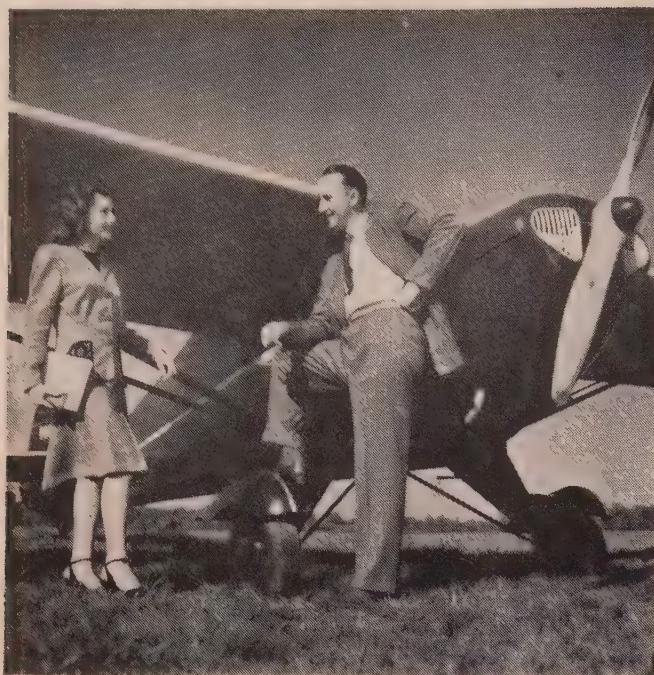


CLIMBING TURN



LEVEL TURN

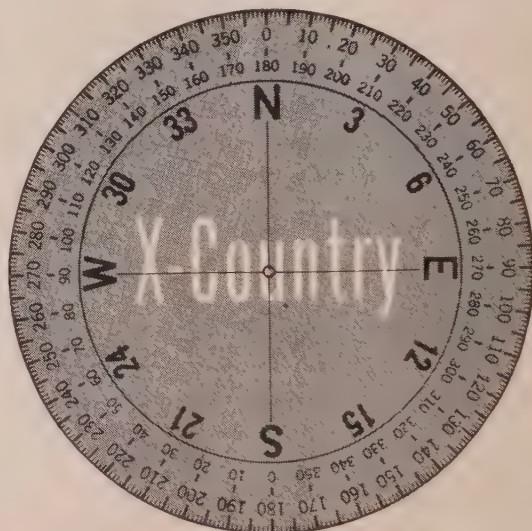




TAYLORCRAFT Model 47 is the first of the Taylorcraft line to be announced since the company was taken over by former distributors and dealers headed by C. G. Taylor, founder of original company. It is a two-place side-by-side



VOLMER VJ-21 is the "something different" in the personal plane line. It has unique monowheel landing gear. Powered by Continental 75-hp engine, it cruises at 100 mph



SEABEES get around. This one operates out of Lake Como, a well-known tourist center in Italy, and is used as an air taxi to transport Lake Como guests from Milan, Italy, to the resort. It is one of two air taxis being operated



AERONCA L-16A is a liaison plane being built for the Army by Aeronca. The first one of 509 Aeroncas on order by the Gov't recently was accepted for the Army by Gen. Stowell



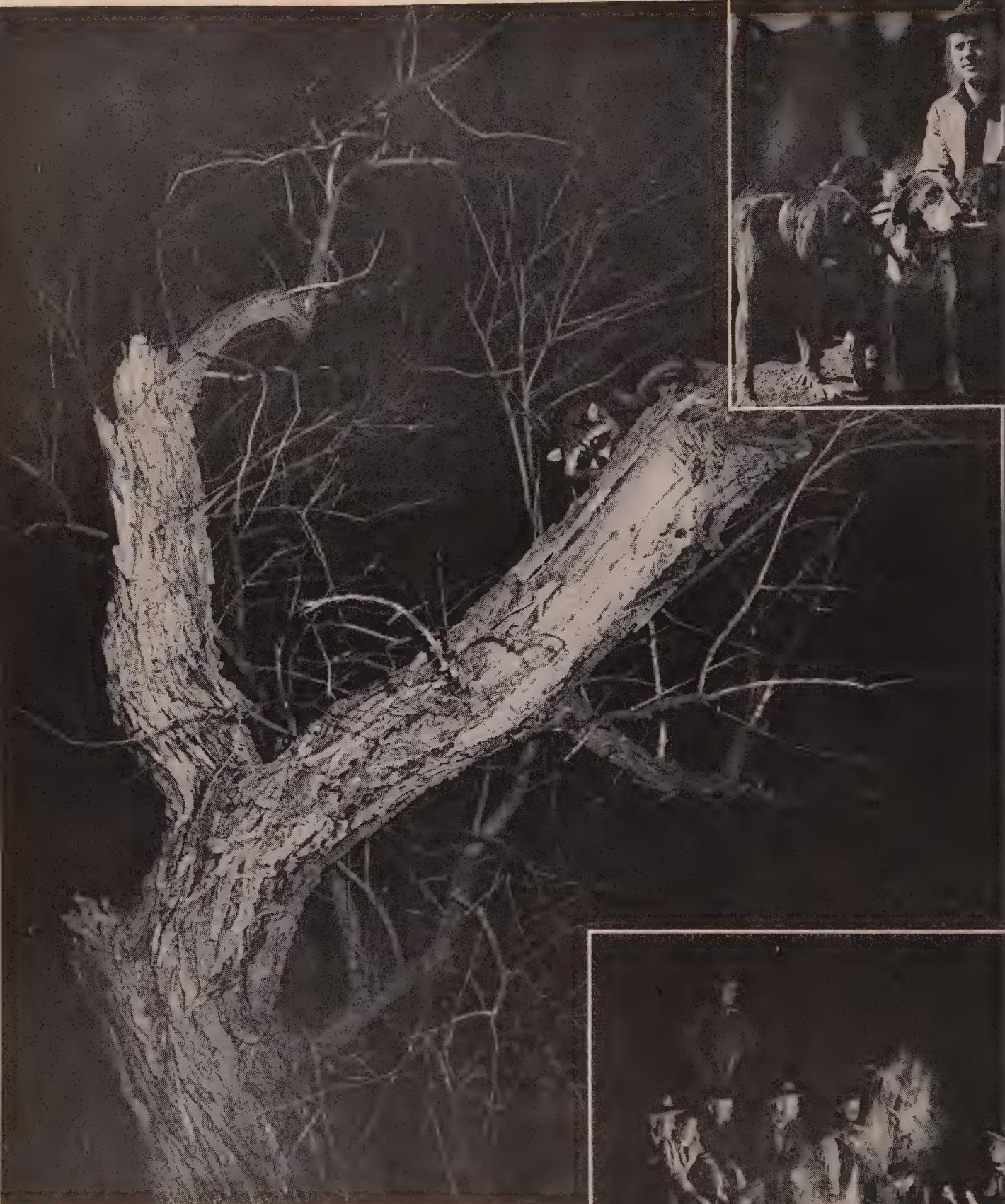
CESSNA 140's get around, too, and get as much ogling in South Africa as they get in the U.S. When a Cessna 140 landed near Johannesburg, two S. African warriors, complete with sunglasses, looked ship over carefully, cautiously

PIPER CUB SPECIAL, successor to the famed J-3 *Cub*, is a better airplane all around. Full cowl, cleaner struts and landing gear give PA-11 an 87-mph cruising range of more than 300 miles. Trainer cabin offers more leg room



HIDGET RACER, designed and built by famed racing pilot Art Chester, is called "Swee' Pea." Powered by 85-hp continental engine, "Swee' Pea" has top speed of 200 mph





BY THE LIGHT of the moon and photographer's flash gun the raccoon peers down at the hunters who left campfire, after several hours of no coons at all, to follow trail. This one was too young, so they let it go



PLANES were tied down at Prescott (Ariz.) Airport. Wayland Potter met hunters, drove them to Hassayampa

Hunters Fly High

OUR planes stretched over the Black Mountains Indian file, the *Ercoupe* and the *Funk* in the lead, followed by the *Aeronca*, with our wobbly T-craft limping behind. The destination was Prescott, Arizona, where our friend Wayland Potter, a hunter and experienced guide, promised to take us coon hunting. Since raccoons only come out at night, each one of us was asked to bring a flashlight, and since the nights in the Granite Dells near Prescott are plenty cold, some warm clothing, too.

Not one of us was a seasoned hunter; that was why an air junket combined with looking for an elusive coon by the light of the moon—or flashlight—was something we just could not resist.

Our start was a leisurely 10 AM on a bright Sunday morning, with the first stop on the shores of Roosevelt Lake by the dam of the same name. The Schumaker brothers in the *Ercoupe* went on ahead to mark out a runway. They said, with all enthusiasm, they ". . . had fished at the spot before . . . and some small rocks they had laid out on either side of an improvised runway marked it so well that any ninny could land." Still, to make it easier, they promised to hang out white rags as markers and wind socks on a couple of saplings by the "runway."

Following the old Apache Trail—rugged cliffs, some still gaping with ancient sandstone caves where the savage redskins and mysterious races before them had lived—we flew the T-craft through drafty canyon corridors. The up and down drafts spanked us like ketchup in a bottle. To lose 20 feet and gain 15 in the next two seconds was nothing at all. In places the walls of the canyon squeezed tighter and tighter on us, until a mere six- or eight-foot clearance was left for the wing tips. The shortcut, however, was worth it. Slower than others, we got to the lake first. The Schumakers and the *Ercoupe* were there all right. The lake looked like most (*Continued on page 55*)



LEAD DOG rode in *Ercoupe* with "Shorty" (center), "Long" Schumaker. Potter holds gun

By TAMARA ANDREEVA



FLYING hunters landed at Roosevelt Lake for bite of lunch, some story telling, lots of laughs

BOOK L'ARNIN'

FLYING is easy! If you don't believe it, take the case of Miss Ophelia Pratt, a school teacher from the rural district that surrounds such places as Cucamonga, Anaheim or even Azusa!

Miss Pratt was born and reared on a farm, which is fine because some of the world's greatest minds are farm-bred. Only Miss Ophelia, unfortunately, isn't one of them. When she came to the city once

(to get away from it all, mostly the compost) and the hotel clerk asked if she had a reservation. Miss Pratt replied, "Oh no, just a small farm."

But don't sell Miss Pratt short. No sir, she's a self-taught individual and has learned how to do a lot of things. She can milk a cow with her left, right, or both hands . . . and she knows how to plow, although it took quite awhile to get a harness made to fit her.

Another thing Miss Pratt taught herself is . . . how to fly. She bought a book, then got permission from the CAA to follow its directions in actual flight. Don Stremmel, armed with a microphone and radio communications to Miss Ophelia's *Cub*, stood by just in case . . . she lost her place in the book. This is the play-back of what happened—and in front of several hundred people, too!

Place: Airport

Time: 2:30 pm

Characters: Miss Pratt: in a *Cub*

Mr. Stremmel: on the ground

DON STREMMEL: "All right, Miss Pratt, just sit easy. Fasten your seat belt. Now turn to page 1 in your book. It tells you how to taxi. You don't have to worry about starting the engine, dear. It's already running . . . your mechanic took care of that. That's right, Miss Pratt . . . now advance the throttle . . . a little more . . . now taxi straight out to the runway. *Look out, Miss Pratt . . .* you're heading into another plane! *Straighten up!* No, Miss Pratt, not you . . . *the plane!* There . . . that's better.

"**IF AH C'N HANDLE A COW, Ah c'n handle a Cub,**" sez Miss Ophelia. So, armed with a book entitled "How to Fly," this school m'r'm decides to learn by doing. CAA, kindly look away . . . a young lady is about to perform



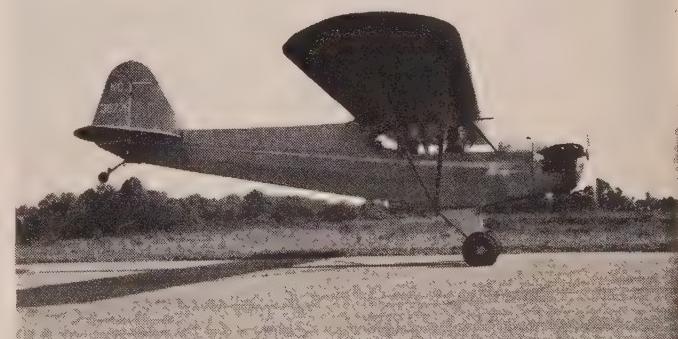
"When you get to the runway, face into the wind, like the book says. MISS PRATT . . . you don't have to get out to see which direction the wind is blowing. Look over there at the wind sock. *Not the mechanic's socks* . . . that over there on top of the hangar! Now head *into* the wind . . . INTO IT, OPHELIA! There . . . that's right. Now you're ready to take off. Look at your book and do just as it says. That's it . . . give it a little throttle . . . a little more . . . a . . . MISS PRATT, YOU'RE TAIL'S UP . . . take your feet off the brakes . . . OPHELIA! Look at the book, dear. See, it says 'No Brakes.' There . . . that's right. See, you're moving . . . you're mov . . . you're OFF!

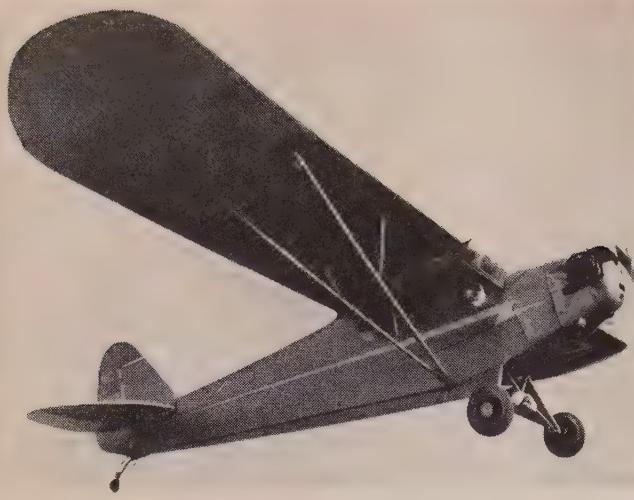
"Now pull your stick back . . . No . . . *not so much*, Miss Pratt, please . . . Look at your book! You're not supposed to go straight up! Page 3 . . . in the book. That's right . . . NO . . . now you're going down! OPHELIA, come back . . . back on the stick just a weeeeeee bit. There, Miss Pratt, that's better. Now you're in level flight. Isn't this fun?

"Turn right, Miss Pratt. Keeep the winnnnggs levellll, Ophelia. That's fine!! See, you're doing all right. Now straighten it up again . . . there . . . that's a good girl. Hold it, Miss Pratt . . . Hold it . . . Miss Pratt, you're turning left now! Not so much rudder . . . there . . . that's right . . . that's . . . right, dear. Now you're okay!

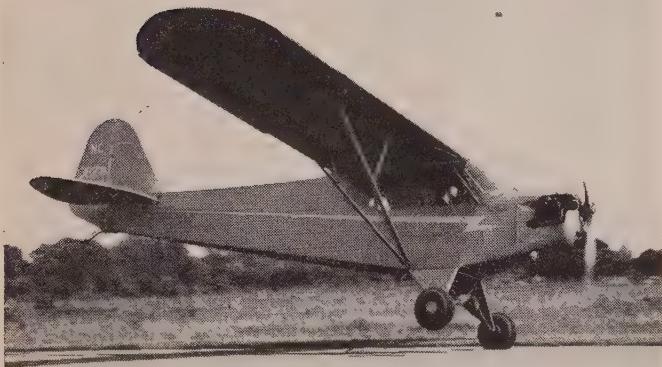
"Now turn to page 4, Miss Pratt, and we'll see how to land. Oh . . . Ohhhhhh . . . Ophelia . . . your book . . . you've lost it! No, . . . it fell out! Don't try to reach for it! Now don't get excited . . . don't be frightened . . . we'll get you down. No, Ophelia, it doesn't fly sideways . . . it goes forward. Get your nose down . . . DOWN, Ophelia . . . not so far . . . Up a little. That's right . . . now come in and land. Not so fast, Miss Pratt! . . .

PAGE ONE sez, "To taxi, advance throttle slowly," but Miss Ophelia's taxi offers too much zig for the zag. On take-off, once brakes are released, she gets off on a wheel, a prayer an a nose held . . . high





MISS OPHELIA didn't lose her place in the book, she lost the book... became first woman to be talked down



LANDING for Ophelia, who apparently always leans to the left, consisted of three tries and a yen for the farm

"AH MADE IT," gasped Ophelia as she stumbled from the plane. "Ah made it," ... and she dove for the dust



Now you're down too far . . . get the nose up . . . UP, *Ophelia!* . . . Ooop . . . Ophelia, not so much . . . down a little . . . that's it . . . down . . . UP! *Ophelia* . . . you can't make it . . . go around again. NO, don't try to make it! Miss Pratt . . . they don't land planes right in the hangars, dear!

"Take your time, Miss Pratt, we're in no hurry. You have plenty of gasoline and nobody is going to want that plane when you get through . . . I hope . . . I hope . . . I hope!"

You're too high, *Ophelia* . . . too low . . . too . . . that's right, Miss Pratt . . . now cut your throttle. Come in straight, Miss Pratt . . . *Ophelia*, get your nose down . . . get your tail down . . . nose . . . tail . . . Get 'em both down together, *Ophelia!* Opps . . . too late . . . *Ophelia*, don't try . . . it's too late! No, *Ophelia* . . . Not downwind!!! Come around . . . your supposed to land into the wind!

"OPHELIA, don't go up . . . come down. Now don't be scared, honey . . . we'll make it this time. Put the nose down . . . no . . . you're too high . . . turn around . . . No, not that way, *Ophelia!* OHhhh . . . *Ophelia*, what are you doing? Come down, *Ophelia* . . . Cut the switch, *Ophelia* . . . It'll fall down! Come on, Miss Pratt . . . get the nose down . . . tail down . . . get 'em both down . . . therrre . . . ! Now wasn't that easy *Ophelia*? You did fine . . . just fine. Hey, *Ophelia*, where you going . . . *Ophelia!* Cut the switch, *Ophelia* . . . you're going to run into the next county and the airport doesn't go that far! Cut the swi . . . there . . . !

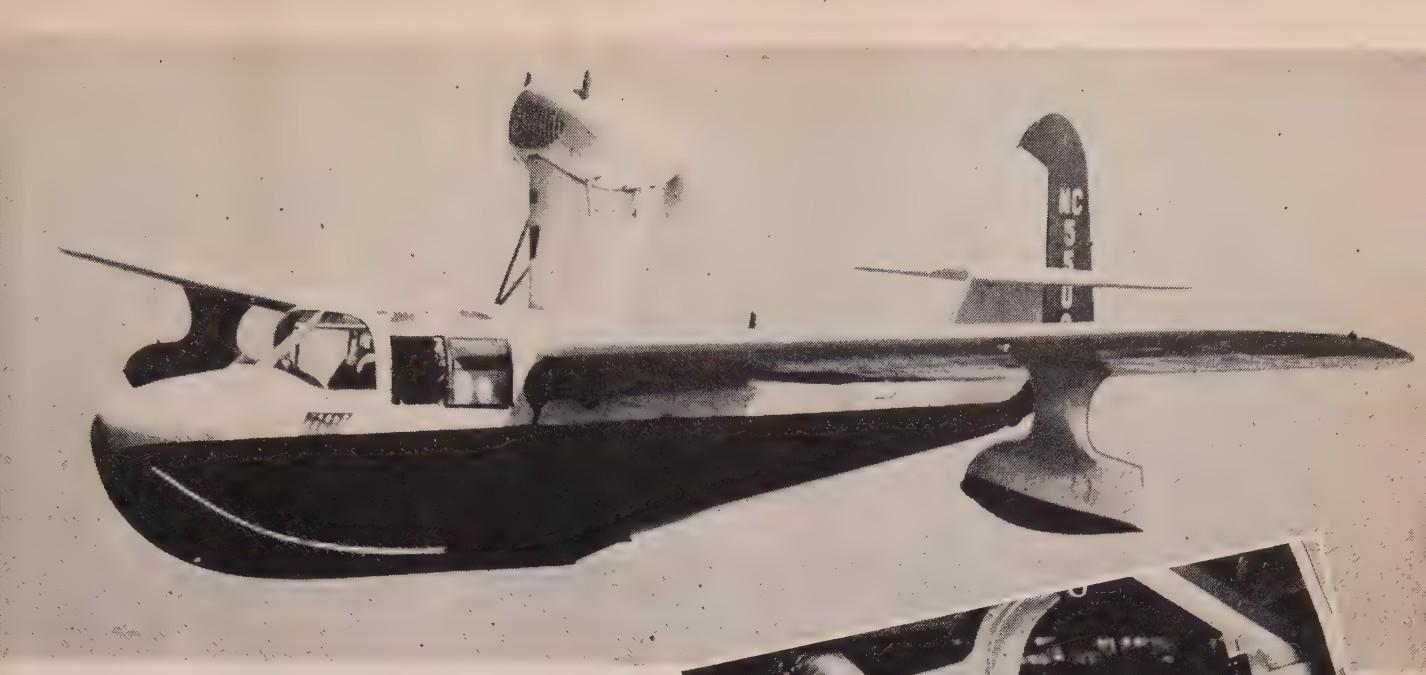
"Well, Miss Pratt . . . wasn't that easy? Now you too can fly a *Cub*, *Ophelia* . . . what's the matter . . . you're green! For heaven's sake . . . she's fainted . . . !"



Miss Ophelia Pratt

Air show visitors will recognize the antics of ambitious "Ophelia." Actually the young lady who created "Ophelia" is ex-WASP Dot Swain, a flyer with 2,500 hours, plenty of flying know-how and a new husband.





GOODYEAR DUCK, although already NC'd, carefully flight-tested, will undergo further rigid field testing

Goodyear Duck

ABOUT a year ago, SKYWAYS gave its readers a pilot's report on the Goodyear *Duck*, a three-place amphibian designed and built out in Akron, Ohio, by the Goodyear Aircraft Corporation. In that report, the author stated the ship, unfortunately, was "not for sale." It still isn't, but . . . amphibian fans and all prospective plane owners may get some measure of hope and encouragement from the fact that the GA-2 is now being flight tested in several widely scattered points in the United States. Fifteen *Ducks* have been built, and it is these ships that will undergo further rigid field testing throughout the United States.

While no announcement has yet stemmed from Goodyear regarding possible production plans for the *Duck*, many who have gazed with longing at this agile amphibian believe these field tests may forerun a decision to put the *Duck* on the market.

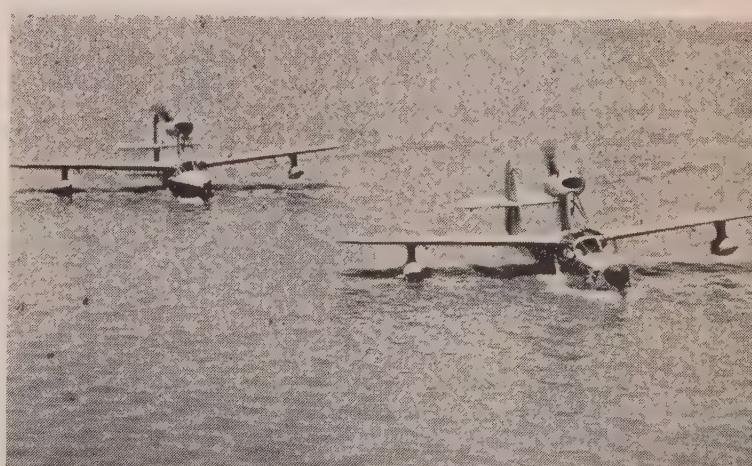
Goodyear's success in building aircraft and components during the war is reflected in the construction of the amphibian and in its handling characteristics both on the water, on land and in the air. Powered by 145-hp Franklin engine, the GA-2 cruises at 110 mph and lands at about 50 mph on either land or water. It has a range of 370 miles.

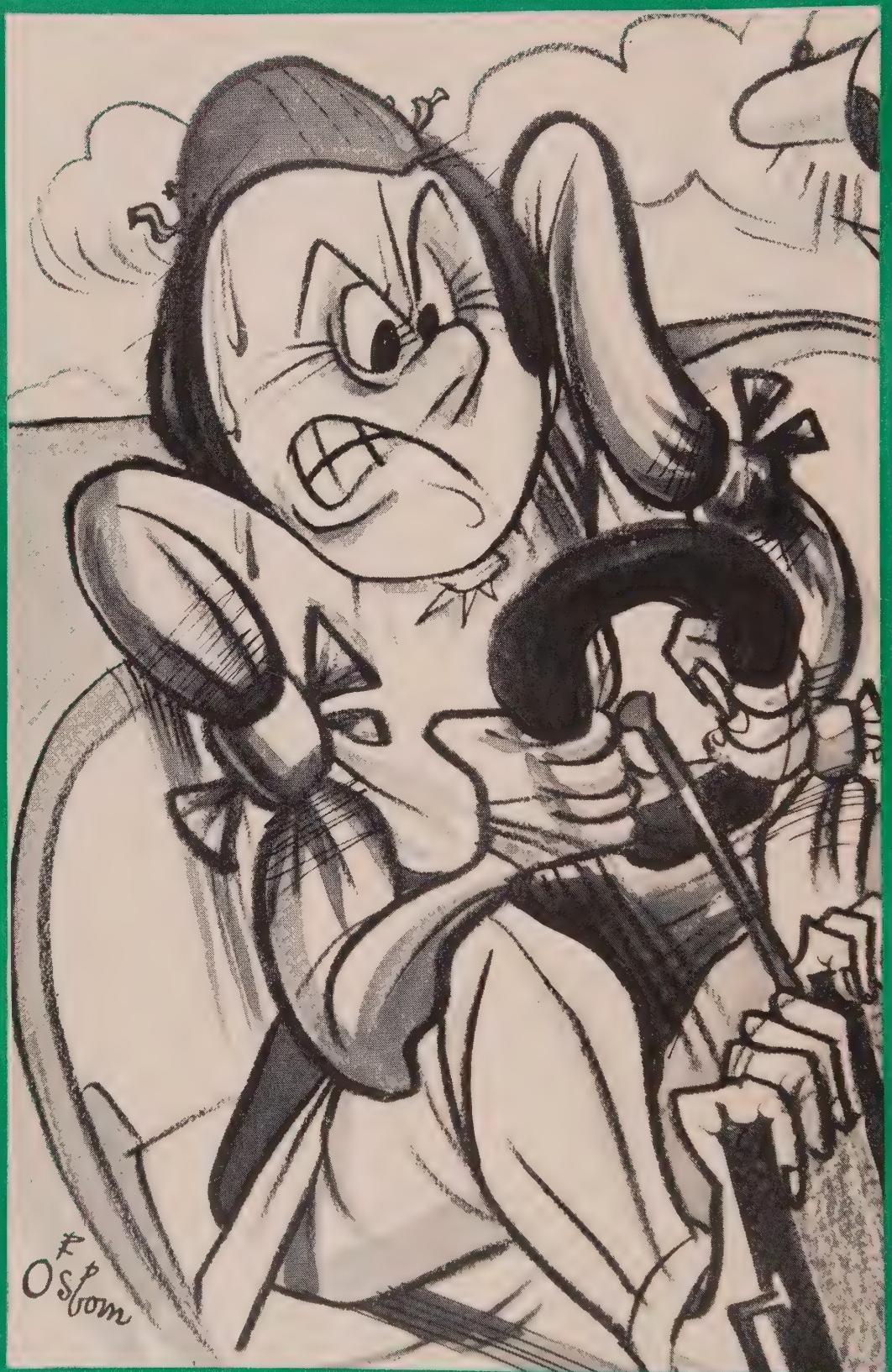
The *Duck* seats two side-by-side in front, a third facing forward in the back. Having an 11-cubic foot baggage compartment, the GA-2 has been called an ideal sportsman's airplane. Pilot reactions, obtained via the field tests, are bound to be in favor of Goodyear's cozy three-placer.

++



FEATURES of GA-2 include wheel control mounted from panel, retractable gear, etc. Goodyear's crosswind gear is being tested on the GA-2





"Dilbert's always a trifle tense on the controls . . ."

DILBERT

By S. H. Warner and Robert C. Osborn

Dilbert Gets Another Ride—

Why do we always pick on Dilbert as the *horrible example*? Frankly, it's because he continually manages to get himself into more unnecessary predicaments per flight than any so-called experienced pilot we know.

Take him, for instance, as a student. He was lazy, indifferent, conceited, careless; yes, and just plain stupid. He will always be a lousy pilot because he never fully mastered the fundamentals. One of the worst hazards in aviation is haphazard.

Dilbert can't even fly straight and level. He never concentrated on it, thinking this was something which would come automatically, with experience. As a result, when he thinks he is flying level now, he usually has one wing low. Either the left wing is down from constantly looking out on that side, or his right wing goes down from the careless weight of his right arm on the stick.

This sloppy attitude has affected his entire flying career. Naturally, when he attempts any more complicated maneuvers, they don't come out very smoothly. He was always too affronted and critical of advice to take any of it.

The sad part of it is that with the proper attention and effort Dilbert could be an expert pilot.

But he was always satisfied too easily. As soon as he got a rough idea of any maneuver, he would close his mind to the finer points. And he was so afraid of appearing "dumb" that he never was known to ask his instructor any questions.

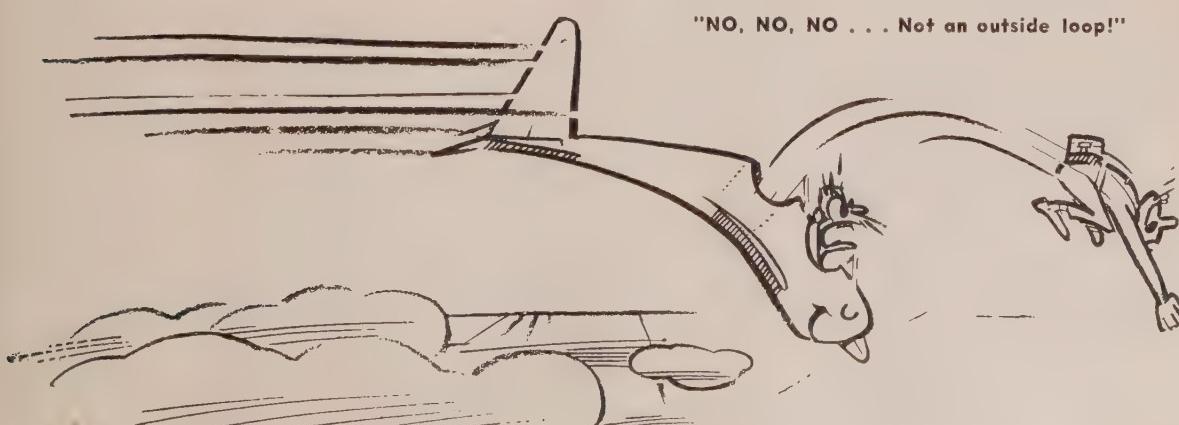
The only thing I can think of which might help him now would be to quit flying entirely until his mind matures and catches up with his body. Maybe then he could start over again and give it the attention and respect which is absolutely necessary to become an expert.

Possibly he will some day, but in the meantime I'm sure he will continue going around boasting how good he is and disproving it every time he takes off. Dilbert thinks he is an aviation wolf, but as every one can see when he removes his flying suit, it is merely lined with sheep skin.

They're Off—You started learning how to fly when you learned to walk. Your scooter taught you more about balance. Then you mastered the art of riding a bike. Remember how the feel of the thing finally became so ingrained in your sense that you were able to ride along without devoting any conscious effort to balance (*Continued on page 60*)



"Dilbert just thinks he's good"



"NO, NO, NO . . . Not an outside loop!"

Alaska Bush Flying

(Continued from page 20)

was drowned out during the spring rains), and no weather reports at all. He broke through a mountain pass blindly and, regardless of the weather on the other side, had to keep going.

By 1935 a few airlines had set up private weather stations which issued their reports in a code known only to the home office. The rest of the pilots began to depend on railway agents, friendly storekeepers and postmasters. Goodman swears by this one: in 1926 the Cordova Air Service telephoned the Mile-26 station on the Copper River and Northwestern Railroad and asked for the weather.

"Weather?" said the agent.

"Sure," growled Cordova Air Service. "What's your ceiling?"

The railroad man investigated, then reported, "I'm not sure, but it looks like Celotex to me."

Thousands of pilots everywhere have struggled to start engines which have been standing outside overnight in cold weather. Alaska's interior, during the long winters, often experiences 30 to 50 below.

In such cases the bush pilot had to heat his engine with fire pots for two or three hours, usually in the dark and often in high winds, heat the engine oil separately, and pour it in. Then, within three to five minutes, before the oil had cooled, he untied the plane from its anchorage, removed the wing and engine covers, loaded the fire pots, covers, etc., into the plane, and tried to take off. If the engine failed to start, the oil had to be drained and the process repeated.

Airlines in the States are not unknown for bitter rivalries, but their competition is a shadow compared to the fight for survival waged by Alaska's "one-man one-plane" airlines during the 30's.

For awhile Pollock and Noel Wien were the only commercial pilots operating out of Fairbanks. Frequently, within five minutes of each other, the storekeeper at some isolated trading center would wire Pollock and the postmaster would flash word to Wien. Both messages said: "A passenger is here." The two pilots would leap for their planes and roar away. The winner collected the fare.

Bidding for freight cargoes was equally frenzied.

"Ten cents a pound for that load," a bush pilot would quote—in haste and with hope.

"Eight cents!" a big-eared competitor would remark.

"Hell"—this from a third who happened to pass by, "I'll carry it for five." He lost money, but he got the business.

Thus when the CAB conducted its first hearings in Alaska in 1939, it was horrified to discover a stage of commercial aviation almost comparable to the barnstorming period in the States of about 1925.

There were practically no schedules. When a pilot had a load, he departed. Frequently a passenger had to round up other passengers before he could start his trip. Nearly 60 per cent of the business was on a credit basis, and pilots seemed to spend half their time trying to collect.

Nobody kept records. When CAB examiners asked a flyer for his "books" he was well ahead of the average if he could pull out a soiled notebook and some check stubs and make a rough stab at his record.

Just as CAB was rolling up its shirt-sleeves to straighten things out, the Second World War began. Uncle Sam's air forces poured into Alaska. Concrete runways began to appear. Emergency fields, weather stations, and blind-landing devices sprang up. While most of these improvements were of more use to multi-engined city-to-city carriers than to bush pilots, the day of rough-and-ready individualism in Alaskan aviation began to fade. Safety and public convenience, rather than potential profits, began to limit the flight ceilings.

During one tense period in 1942, when Dutch Harbor was smouldering from Japanese bombs, and Army intelligence officers feared an invasion in the Nome area, the Alaskan pilots repaid Uncle Sam for his help.

This little-known story began on June 20. To reinforce the Nome garrison, which would have been helpless in the face of a full-scale invasion, Alaskan Department Headquarters ordered that 2,000 troops stationed near Anchorage be rushed to the Seward Peninsula "immediately." On that day every airplane in the Northland was requisitioned. A handful of Army transports and Canadian cargo carriers were reinforced by the most amazing armada of airplanes ever assembled for a military operation. From every part of Alaska swarmed Stinsons, Bellanca, Pilgrim, and ancient tri-motored Fords.

Flying almost 24 hours a day in the light of the midnight sun, this fabulous formation moved all the troops and all their equipment to Nome—without a single accident—in 218 separate flights. The invasion never

came but, thanks largely to bush pilots Yanks were ready.

Inevitably, war took its toll of the a bush planes. With parts manufacturers on government contracts, Alaskan pilots no alternative except to strip one plane to keep another in the air. Fantastic ingenuity was displayed. Some planes became third original construction, one-third rowed" parts, and one-third tape and

In isolated emergencies, broken wings were pounded together with two-by-fours and rifles replaced wing struts. CAA looked the other way. "Unconventional maintenance was necessary," it said.

And strangely enough, the end of the war brought no relief. Alaskan bush planes have a snail-like landing speed and a vertical take-off. But most postwar single-engine plane production has been geared to the businessman and sportsman who wants to go somewhere in a hurry. That type of plane generally can't be landed in the tight Alaskans use as outlying "airports."

So the bush pilot appears to be stuck most indefinitely with his ageing grandpa planes—the Stinsons, Bellanca and others built between 1932 and 1940 which can fly at 50 mph in as little as 600 feet.

Often you can find Pollock at the banks airport casting a sour eye at the postwar single-engine jobs settling down after their maiden delivery flight from the States.

"Look at that," he'll say. "Look at that long landing roll. I'd give five of those planes for one new Bellanca built 15 years ago."

War's end brought another sharp change for Alaskan aviation—consolidations. Formerly competitive bush pilots found themselves joining hands to resist the increasing flux of large airlines with multi-engined planes and of veterans willing to try them once.

Alaska Airlines, which began as a man one-plane outfit in 1932, was bolstered by outside capital and by 1944 could boast \$3,000,000 in assets and 6,400 route miles. Pacific Northern—consisting a few years ago of Art Woodley and his airplane—recently became a corporation capitalized at \$2,000,000.

The giants, of course, are Pan American Airways and Northwest Airlines. Pan American had been flying into Alaska since 1938. Northwest came in on a wartime contract to the Aleutians. Both applied for the spectacular route to the Orient. After lengthy hearings, CAB awarded it to Northwest, and Alaskans saw their first four-engined civilian planes last summer.

They witnessed another revolution in change. The flying field became crowded. Dozens of ex-GI pilots streamed into the territory. With practically no route already CAB-certified, most of them were forced into flying schools or scheduled operations. Raymond St. John, CAB director for Alaska, says the saturation point has just about been reached.

But away from the lighted concrete ways along the major routes, aviation in Alaska retains a flavor that is peculiar to its own.

The bush planes still leave weekly for Fairbanks for their hazardous postage-stamp landing fields. Their cargoes are what machines, Model A jalopy engines, carriages, 100-pound sacks of flour, packages,

(Continued on page 49)



New Four-Place Silvaire

Luscombe's new all-metal utility plane is this four-place Silvaire. Powered by 165-hp engine, new Silvaire offers more cargo space, better visibility, small-field adaptability

Here's a BT for Four



MECH-DESIGNER Strode used cutting torch to remove the back seat of BT



STRODE supervises work on BT kit. Retail price is \$275; installed, \$395 (fact.)

A bicycle built for two was all right in Grandma's day, but a BT built for two isn't so practical today. At least that's what Johnny Strode, a 27-year-old mechanic out at the San Bernardino Airport, thinks. And here's what he did about it.

He completely cut out the back seat of his surplus trainer—seat, instrument panel, controls, et al. In fact, he removed some 90 pounds of material in this operation. Then Mr. Strode welded up a pair of seats that were stressed to 3,500 pounds, and had them approved by the CAA. His seating arrangement in the BT puts one passenger in a single seat about where the original instrument panel was located, and two additional passengers in a wide back seat.

With a full load of passengers and fuel for two and a half hours, the 450-hp plane will gross 4,300 pounds on take-off. Mr. Strode points out, too, that his four-place BT will cruise at from 130 to 140 mph, has the stability of a large airplane, and is equipped with the finest radio the Army could buy. In fact, he's all set to take three friends and not just one on a BT air junket anytime. Mr. Strode has assembled kits which he sells BT owners who want them. 



PACKED for mailing, conversion kit is available to owner wanting four-placer

CONVERTED from two-placer to a four-placer, this BT now hauls the owner and his friends (plural), not just a friend. With full load 450-hp ship grosses 4,300 pounds



A Farmer's Plane

(Continued from page 23)

ing up on that drainage work by plane than I can by car. It takes about a quarter of the time to check it by air as it does to do it by car . . . and that whether the job is a mile from home or 20 miles. Because the work is all tile drainage, we have to know that the work can be done before we send in the equipment to do it. With men for a crew costing about \$40 a day, you can see why making a close check in the shortest time is the profitable thing to do.

About a year ago I was appointed to do a job that called for viewing a large Judicial drainage system. I decided to map it before starting the ground work. I hopped in the plane and in an hour had mapped 5,500 acres. That in itself saved many days of footwork but—in addition—the rough drawings I was able to make from the air mapping were more accurate than even the engineer's blueprint of the area.

There probably isn't any section of the country this spring that didn't have more than its share of rain. Certainly southern Minnesota was no exception. One Sunday morning during corn-planting time, we discovered that some special seed corn plots required special plates for planting. The plot was a 38-acre field under contract to one of the big seed corn companies, and there were no plates to be had locally among the other machines. In a desperate effort we phoned the dealer, 28 miles away, who handled the planters and asked him to deliver the special plates to his local airport. Twenty-one minutes later we had the plates . . . thanks to being able to fly over to the town to get them. This saved only an hour's time and that may not seem like much but exactly what that hour was worth in this case will be finally determined this fall when the corn is harvested. A combination of factors leads me to believe that that single hour may be worth several hundred dollars. This, because it rained that evening and that hour's time was equivalent to five acres of corn that wouldn't have been planted for another week. With the season already so far behind, you can readily see why I believe the 60 minutes that airplane saved might be worth several hundred dollars!

Being in the pure-bred cattle business, raising Polled Shorthorns, I like to go to a lot of sales and they are usually many miles away. Before I owned an airplane, a bunch of us would have to get up in the middle of the night and drive a strenuous 200 or 300 miles. Then, after a hot sales session, we'd pile back into the car and drive back home again, all within the same 24 hours. Net result was that the fellows who made the trip would spend the next few days being dead tired. The airplane has changed all that now, and the farmer's wives are happier, too. When a sale comes up these days, I get up at my regular hours, enjoy a good breakfast at home, fly the distance to the sale and then get back home again in the early evening. After a trip like that by plane I feel more as though I'd had a day's vacation. With my Stinson, Omaha is less than two hours away, Chicago slightly more than three, Oklahoma City about five and Bismarck under four. And the safety element is far in favor of the plane . . . I know because I've made many trips to those cities both by



Lockheed's New P-80B

This is the first flight photo of AAF's new Lockheed P-80B, an improved version of the P-80A. It has faster firing guns, more armor plate, increased take-off, climb via water-injection in Allison-built jet, pilot-ejector seat and enclosed radio antenna wires. The ship is delivered unpainted. Note dive flaps extended below belly

plane and in a car. All my flying is done contact and I've air-traveled a thousand miles in the daylight hours of a single day and still had time to spend a full six hours on the ground taking care of business. By road this would be the equivalent of about 1,250 miles . . . and the cost is about the same for gas and oil for the plane as it would be for gas and oil for a car. Considering tire wear in the case of the car, the trip by plane definitely is cheaper.

A farmer with a plane no longer searches out a lost cow or newborn calf on foot or horseback as he used to do. Now we do it by plane in a tenth the time. I've spent many hours on foot, as many on horseback and some on a truck, using two men on the rack as spotters, looking for newborn calves in the tall pasture grass. For those of you who've never hunted a well-hidden calf under those conditions, it might be hard to realize the importance of such a job and how difficult it is. And for those who've never used a plane for such work you've got an exciting, time-saving experience coming to you. Spot your newborn calves by plane once and you'll prefer doing it that way from then on. It doesn't call for low flying either. The red, white and roan Polled Shorthorns stand out well against the green of the pastures.

Another use to which I've put my plane is "scouting" a farm for appraisal. When someone wants to buy a farm but wants a farmer's opinion as to its worth before he signs the papers, it's a simple matter to hop into the Stinson, fly over the land and make an appraisal of the farm's relative value. My personal advice to anyone buying a piece of land for a farm or ranch is to look it over carefully by air before making a final decision. A growing crop looks a lot different from above. What's more you can tell exactly what is underneath it. You can spot drainage lines, erosion (if any), foul or noxious

weeds and anything else you need to see to know the ground you're buying.

Being one of the crop reporters in this area, I've been given credit for being one of the first to use an airplane for this reporting job. While those of us who do that sort of work are strictly volunteers for the government, I believe that within another five years, a number of private concerns will hire men and buy planes for just such work. Today, the idea of using a plane is too new and most of the old hardheads won't give way to progress, but to me you can't argue with the fact that you can survey 50,000 acres an hour with my Stinson and can get a more accurate account than can be done in a week with an automobile!

Specifically needing a Stinson for this sort of flying probably isn't necessary, but . . . knowing you aren't going to have to fight with your plane in order to do such a job safely offers plenty of satisfaction. Too, you can take someone with you if you're using a Stinson, and that second party can help you spot things that you might otherwise miss. Another important thing . . . the Stinson will not spin out on you unexpectedly. While the ship isn't spin-proof, I can tell you truthfully that the best flight instructor I know of hasn't been able to spin my plane and he's tried twice! Though I've been told it can be done, I've yet to see it.

I don't like spins or any other aerobatic. If you took a new car out to see how many fool things you could do with it, you might be surprised how quickly you could wreck the car and break your neck. As far as I'm concerned, an airplane fits into that same category—if you're reckless, it can hurt you.

The number of things a farmer can use a plane for are many. You can ride fence better and faster, and if you want to talk along some salt for the back pasture, it can

(Continued on page 51)

Alaska Bush Flying

(Continued from page 46)

of insulin and buckets of paint. Their pilots' pockets are bulging with odds and ends they promised to pick up in the "big city"—a hand-painted necktie for the trapper at Eagle, an inner tube for the postmaster at Chicken, a few skeins of baby yarn for the prospector's wife at Fort Yukon.

The strange things still happen—there's Jim Dodson, for example, who twice on "mercy flights" has finished a poor second to the stork. Flying with one hand and helping deliver a baby with the other is the result of an emergency peculiar to frontier conditions.

And flying conditions in Alaska, generally comparable to those in the States, still have their unusual extremes. In the States we know zero and 10-below temperatures, but not many of us know the minus-40's and 50's of the sub-Arctic winters. In Southeastern Alaska aviation is almost entirely on floats, and there are some pilots who say they'd rather make their emergency landings on closely knit tree-tops than in unknown, rock-jutted waters. The fearful Arctic "white-out" is far from conquered. Sky, horizon and land blend endlessly into a treacherous over-all gray. Not long ago a pilot, certain his altitude was well over 2,000 feet, barely missed ramming a caribou which appeared out of nowhere a few hundred feet ahead.

In Alaska, 60-year-old prospectors learn to fly because they're afraid the pilot who takes them into the diggings will forget to come back four months later. In Alaska, Eskimos are rounded up each spring and flown to the great Bristol Bay salmon canneries. In Alaska, airlines conduct shopping services for isolated customers and the DC-3 hostesses are married off faster there than anywhere else.

The bush pilot still is a king in the land he conquered. He has, in fact, suffered only a single major defeat.

That happened in 1943. A raging storm broke suddenly over the Seward Peninsula. Ed Waller, an experienced bush hand, was blinded and tossed about and by pure luck brought his Stinson down two miles from the Nome airport. Frank Whaley, flying another Stinson, came down in a field half a mile from Nome. Bill Munz, who now has the largest airline on the peninsula, came down near an Eskimo village and spent the night in his plane. An Army Norseman, near the same village, landed on one wing and one ski and was blown upside down. At a military airport outside Moses Point, another tiny native village, a 12-passenger Pan American Electra made its forced landing. The gale was reaching 60 mph, and the crew struggled frantically to tie down the plane.

At this moment, with ace bush pilots huddling the ground all over the peninsula, the Moses Point control tower suddenly sighted a large Russian transport coming in. The plane made two passes at the runway. The tower radioed frantically: "You'd better make it this time; the wind's getting stronger."

The Russian radioed back: "Hell, I'm not trying to land—just checking your beam in case I ever get caught in a storm!" and went on to Fairbanks.



MAKING FLYING SAFER



STANDARD OIL COMPANY (NEW JERSEY)

Equips New DC-3 with
IRVIN Chair Chutes

● To make flying safer for company executives, other passengers and crew members, Standard Oil Company (New Jersey) has equipped its new Douglas DC-3 with Irvin Custom-Built Chair Chutes. Earlier in the year, the company equipped its Beechcraft and Lockheed aircraft with these same Air Chutes. The Standard Oil Company (New Jersey) and many other prominent plane owners know that Air Chutes serve the same purpose on aircraft as lifebelts on an ocean liner. They are doing the obvious, sensible thing by equipping their planes with Custom-Built Chair Chutes.

Interior of the new Douglas DC-3 owned by Standard Oil Company (New Jersey) showing the Irvin Custom-Built Chair Chute installation. A chute is fitted into the back of each seat . . . combines beauty, convenience and comfort . . . is not worn normally but is instantly available in an emergency. Write to Irving Air Chute for complete details.



FEEL SAFER . . . BE SAFER . . . with IRVIN Custom-Built CHAIR Chutes

There are now over 35,000 registered members of the Caterpillar Club. Should you qualify, please write us.



IRVING AIR CHUTE CO., INC.

1675 JEFFERSON AVENUE, BUFFALO 8, NEW YORK

Pacific Coast Branch: 1500 Flower St Glendale 1, Calif.

Check On Champion

(Continued from page 24)

kind that are minor until neglect allows them to develop into big problems causing expensive trouble. Knowing where to look for hidden wear on any plane can prevent sudden mishaps and aid in keeping high-priced upkeep down to a minimum. The science of taking care of airplanes properly is "preventive maintenance," the general idea being to prevent against a big crack tomorrow by taking care of that little crack today. Since no plane takes more punishment than the one on a school flight line, we chose as a guinea pig for the survey a flight training school that has a good safety record, top maintenance and a complete, clean shop. This was Air-Facilities Corp., at Teterboro Air Terminal, New Jersey. Flying equipment here usually consists of eight Aeronca *Champions*, one Aeronca *Chief* and one Ranger-powered Fairchild F-24.

The eight *Champions*, bought at different times during 1946, generally have averaged almost one periodic inspection (10 hours) per plane per month since individual delivery dates, so troubles that are apt to crop up are fairly well tabbed by the mechanics. The chief of maintenance, Jack Carroll, has a complete schedule of trouble-preventive care that effectively limits abnormal wear. At the time the school was checked, the only plane out of commission was one *Champion* undergoing major wing repair for accident damage.

For a general shakedown check we chose the oldest plane in the school from the standpoint of aircraft time—NC 83110, with 719 airframe hours and 145 hours on the engine, its second. The point about engine time should be explained. The shop always has two spare engines on hand so that required engine changes on the school planes may be made as fast as possible. Where a private owner would have his original engine majored and then re-installed, the school, so as not to lose valuable flying hours, swings one of the spare engines in, has the original engine overhauled and it takes its place as a spare. There is nothing unique about the practice, but private owners might misunderstand the succession of seemingly new engines in the school planes so it's worth noting.

The plane was clean and the only evidence of previously repaired damage was a small section of the trailing edge of the right wing, inboard of the aileron, where the fabric had been patched. We might add here—Any troubles mentioned hereafter do not particularly apply to this plane alone, but rather are the sum of the experiences of mechanics working on this type of airplane.

Starting at the nose of the plane and working back, the propeller was in perfect condition. The only difficulties experienced with the wood props are those that come with age, i.e., general deterioration, and none had shown up thus far on the Aeroncas in the school. The propeller has to be removed to take off the nose cowl, but usually there is very little occasion to do this between periodics when removal of both is routine.

Moving to the rear immediately under the cowling, the basic cylinder air-cooling system, apart from inter-cylinder baffles, is made up of two side and two rear sheet aluminum baffles. These are important check points. The nose cowling fits closely against the

leading edges of the two side baffles and vibration has been known to cause the leather pads on the aluminum edges to wear away and in time chafe through the nose cowling. The leather stripping stapled to the two rear baffles must always bend forward and inward so that air pressure causes a tight fit against the top cowl and insures against the loss of cooling air. After long use, this leather binding dries out and stiffens under engine heat. This prevents the smooth fit necessary after the cowl is installed. The leather must be kept pliable and should be treated whenever its condition warrants it. On the guinea pig plane the front leather was beginning to stiffen again, although previously treated with light oil.

One particularly troublesome section of any airplane is in the engine exhaust and heating system, and the Aeronca is no exception. The exhaust stacks on each side of the engine are covered with heater muffs at the "Y" junction, the right muff assembly providing for the carburetor heat and the left muff for the cabin heat. On the school planes the cabin heater muff has been completely removed and the firewall connector closed because it was found that in some instances cracks began to show in the left exhaust "Y" and the only way to keep a close watch was to remove the muff permanently, which also effectively halted the cracking. The right muff for the carburetor heat is removed at the periodic inspection of the hidden portion of the stack, but strangely enough the right junction has not shown as much tendency to give trouble as the opposite side. Troubles of this type have been largely eliminated on newer *Champions*, but the inspection is still required on the periodic as with any other plane that has muffs in the exhaust system.

The muff assemblies are themselves given to wear at the flexible tubing connector because of vibration. The light aluminum elbow is attached to the muff with one long bolt and when this loosens the bolt begins to wear through the wall of the attaching neck. The correcting action is replacement of the outside half of the muff. But if new bolt holes are drilled through the neck on a diagonal away from the old ones, the original assembly will give additional service before it has to be replaced.

The carburetor-heat intake below the engine also presents a problem in the wearing of aluminum. The light butterfly valve loosens

after long-time wear and has to be checked to prevent defective operation, but since the assembly is easily seen when the bottom cowling is removed for routine maintenance there is no reason for this to be neglected for long. If the butterfly becomes too loose, replacement of the worn riveted triangular plate at the left side of the assembly will usually correct the condition, since leverage is applied on that side and it wears first.

The complete engine installation is simple and largely trouble-free. Naturally, if the engine is not checked at regular intervals, oil leaks will occur at the usual points: rocker box covers that warp or are not tightened down correctly, and at the bases of push-rod covers when the clamps are allowed to loosen up and are not checked for security. At the firewall, at the point where the oil-temperature line and the fuel-primer line pass through the left side of the cabin, the school planes have had tape added to make the grommet fit more snug. This will prevent the cutting of the grommet and subsequent damage to the lines from vibration chafing.

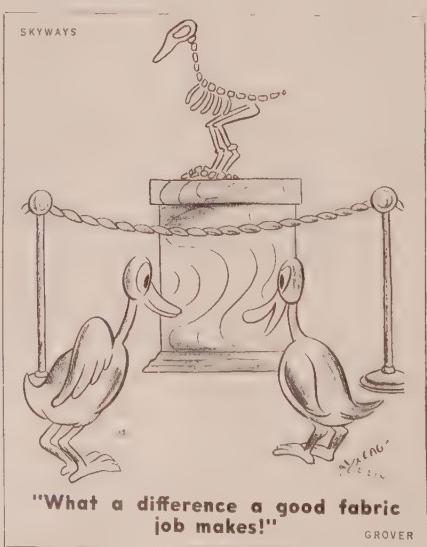
Because of the hard usage it receives the landing gear group is usually the next place requiring frequent inspection. The Aeronca oleo strut assembly is practically trouble-free as long as correct maintenance is performed. One of the frequent excuses for cussing most mechanics run into on any plane is the discovery that some blanket-blank used the wrong hydraulic fluid or oil in the oleo strut, resulting in the deterioration of the seals or the sludging up of the inner walls of the piston assemblies. Planes that are maintained continually in one shop don't usually suffer from this too-common error, which has nothing to do with the manufacturer and is largely found on transient planes that undergo maintenance at different fields where hurry-up-and-go care between flights may cause future pains.

The potential danger point on the Aeronca *Champion* main landing gear is found in the brake cable, apart from the routine inspection needed on any gear for overstressed or worn parts after continued hard or cross-wind landings. If the brake assembly is not kept up to snuff, the actuating cable, which passes from the fuselage through fairleads along the underside of the axle strut to the brake cam at the axle, will loosen up and in flight will vibrate against the strut, causing damage to the cable. An Aeronca coming in for a landing from another field a short time before this survey was made illustrates the possibilities of neglect. The landing was normal up to the time the pilot applied brakes, but right after that the plane lurched and the pilot had a narrow escape from a possibly vicious ground loop. After he was able to stop the landing roll the pilot checked and found that one of his cables had snapped, largely because of irresponsible maintenance. Marks on the axle strut showed that the condition must have existed for some time to cause the heavy cable to break.

One remedial action by the manufacturer which would lessen the possibility of this type of accident would be the addition of another fairlead in the middle of each axle strut to prevent the whipping action when the cable does loosen, but proper inspection accomplishes the same thing.

The tail-wheel assembly is the next stop because it is open to more "bounce" troubles

(Continued on page 53)



A Farmer's Plane

(Continued from page 48)

be done. You can get repairs to some critical piece of farm machinery faster, and you can get to a distant factory in a hurry if necessary. You can haul enough baling wire in my Stinson to tie up 250 tons of alfalfa. You can, that is, if you can locate a factory that has baling wire to sell at this time. It's a pretty tight commodity right now.

As far as I'm concerned, crop dusting, spraying and seeding belongs to commercial flying outfits, although I do know of a fellow farmer who successfully seeded a field of oats with his plane this year. Another farmer took wheat to market in his plane.

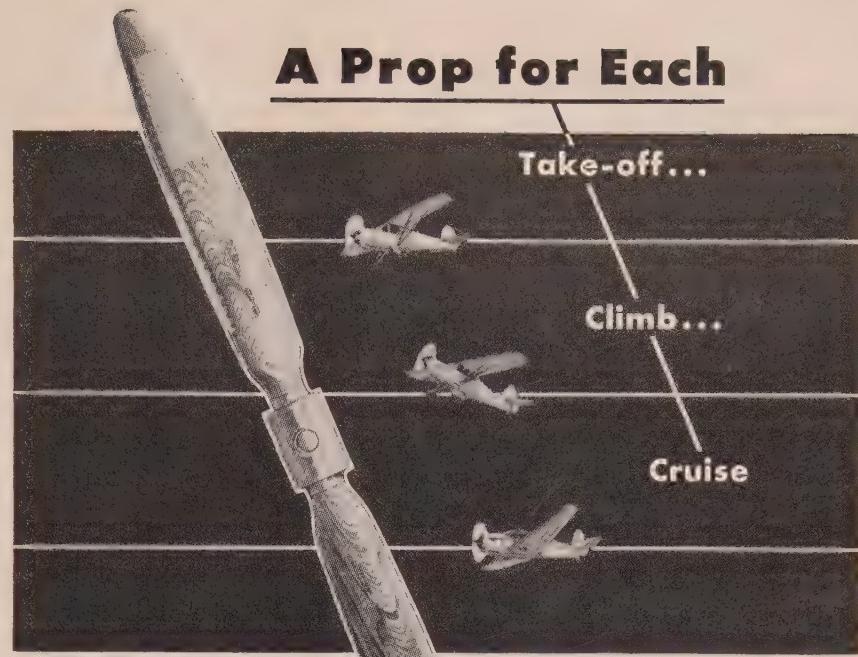
There are plenty emergencies that call for speed, and a farmer with a plane can be a johnny-on-the-spot. Just recently we flew 600 miles on what could certainly be called a mercy flight. A fellow vacationing in the northern part of the state suffered an arm infection that was terribly painful and required hospitalization. We flew up to an airport near where he was, loaded him aboard the plane, then flew him to a hospital near his home—all in about 5 hours' time.

Some farmers maintain that you don't need a plane on a farm as much as you need other things. Well, maybe so. After all, I farmed a quarter of a century without one, and I still could if I had to. I was 35 years old, too, before I ever had a bath in my own bathtub. Our farm has had electricity for the past 15 years, but I know of thousands of other farms that still do not have it. True, I got along without electricity for quite awhile, but . . . when the current goes off now, my cows get pretty thirsty, the refrigerator stops, we have no hot water, the bathroom is closed and our gas pumps won't work. We can't pump up a tire and we can't do the chores. Why? Because electricity became so dependable we discarded its predecessors. The airplane is that dependable in my farming, too, and that's why I use it. Occasionally I've been asked if I wouldn't like to have a ship with a retractable landing gear. My answer to that is to explain that I'm not a seasoned pilot, except by old age, and if I had a ship with a fold-up landing gear, I'd probably do what a lot of others have done . . . slide the ship in on its belly sometime. At the present I'm willing to sacrifice some speed and keep my fixed gear. I don't want a lot of night flying equipment either. I don't want to fly at night 'cause I think life is too short to work day and night too. The Stinson is a safe airplane and to me it's tops. It is strongly built, has good upholstery that is suitable for your best clothes and still won't get dirty if you pile in from the barn and fly away in it. Its engine is dependable, has every instrument necessary for normal flight and power enough for all purposes. The Stinson was designed for an economy of operation within reach of Mister and Missus American Farmer. And most important of all for me . . . it suits me.

Farming is the biggest and most necessary business on earth, so when you see a farmer flying his own plane, you can be sure he's a progressive fellow who's getting the most out of his time, work and property. The day of an airplane on every farm and a roast of beef in every oven may be nearer than most of us think.



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SEE NOVEMBER ISSUE SKYWAYS

The Third Ten

(Continued from page 29)

5. The aircraft to be brought to rest in the two flights at a point not more than 164 feet (50 meters) from a point previously selected by the candidate. (A 1910-version of spot-landing)

Within a year or two the Aero Club of America thought it would be a good idea to add another license category: Expert Aviator; and to make its test more severe for the airmen who had already passed the first test. Only aviators who were over 21 years of age could apply for this license. If a pilot was awarded Expert Aviator rating, he could fly over cities in a straight line, and was granted the privilege of landing on Governors Island, New York. To qualify, the airman had to:—

1. . . . pass a physical examination.
2. . . . make a cross-country flight to a point 25 miles away, and return to starting point without landing.
3. . . . make a landing from 2,500 feet with power off, and come to rest within 164 feet of a previously designated point, without the use of motor or brakes.
4. . . . fly Figure 8's around two marks 1,640 feet apart, keeping within semi-circles of 164-foot radius while turning the marks.

Thus, there came into being the Expert Aviator. Accordingly, the Aero Club could then qualify airmen as:

1. Aeroplane Pilot.
2. Expert Aviator.
3. Spherical Balloon Pilot.
4. Dirigible Balloon Pilot.
5. Hydro-aeroplane Pilot.

Strange as it may seem, not all of the early birdmen qualified in any of these categories, nor did they all take advantage of the opportunity of receiving a license as soon as they could. For instance, Lt. B. D. Foulois (later Major-General Foulois, Chief of the Army Air Corps) was the first officer detailed to learn to fly. He was detailed in July, 1908, was flying during 1909, 1910 and 1911, and yet his Aero Club License was No. 140. At least seven Army officers started flying after he did, but received Pilots' Licenses before him. There must have been at least 135 civilians who began flying after Lt. Foulois who also received their licenses before he received his.

Now, to get back to the chronological list of pilots.

Number 22 was J. C. Turpin. He was a high school boy when he joined up with the Wright's. A natural-born pilot, he learned quickly and was soon a member of the Wright's exhibition team, along with Johnstone, Hoxey and Brookins. He was exceedingly apt in teaching others how to fly, and so was kept at Sims Station as an instructor. This was in 1911.

In 1912, Turpin parted company with the Wright's, and decided to go into the flying business on his own. He teamed up with Phil Parmalee, and started making exhibition flights in various cities in the United States. Parmalee was killed during the summer of 1912, and Turpin stopped flying. As far as can be determined, he never went back to it.

Another member of the Wright exhibition

team was Al Welsh, holder of License No. 23. He first came into prominence when he made an American endurance record of 4 hours, 2 minutes, during the Aviation Meet at St. Louis, in 1910. Like Turpin, when the exhibition flying began slowing up as an attraction, Welsh was kept at Dayton for test flying and as an instructor. Turpin taught Lt. Milling the rudiments of flying, and Welsh taught Lt. Arnold. When the Wright Company delivered their first plane, designed and built to Army specifications, Welsh was sent to College Park in June, 1912, to put it through its tests. One of the requirements was a flight for altitude with full military load. Welsh, flying with Lt. Hazelhurst as a passenger, evidently decided to gain speed and additional climbing power by making a short dive first. As he pulled out of the dive to start his climb, the plane collapsed. Neither Welsh nor Hazelhurst had a chance to survive the crash.

One of the many balloonists and parachute jumpers who decided to take up heavier-than-air flying was J. J. Frisbie, holder of



License Number 24. Frisbie flew the Curtiss-type plane. He built a couple for himself, and bought a couple more. He was one of the tough old school who taught himself to fly. He was quite successful in his flights at fairs, aviation meets and amusement parks for a while but, like so many of those old timers, he did not last very long. Frisbie was killed in an airplane accident in the fall of 1911.

Although the headliners of the Wright exhibition team were Hoxey, Johnstone and Brookins, there were several others. On the Wright team second string were Phil Parmalee and Frank Coffyn, holders of Licenses No's. 25 and 26, respectively.

During the Winter Aviation Meet in San Francisco, in 1910, Parmalee was pilot in the plane that probably did the first bombing with live bombs. He carried Lt. Myron Crissy, of the Coast Artillery Corps of our Army, as passenger, and they dropped bombs which Crissy made from old pipe and which were filled with black powder.

A month prior to the San Francisco Meet, Parmalee made history when he carried the first payload of merchandise in an airplane.

This was a load of silk, five bolts, which he carried from Dayton to Columbus, a distance of 65 miles.

Early in 1911, Parmalee was sent down to the Mexican Border to help the Air Arm of our Army, which, at that time, consisted of one officer, Lt. Foulois, and a handful of enlisted men. Shortly after his arrival, while on a cross-country flight from San Antonio to Eagle Pass, the engine of the plane quit, and Parmalee and Foulois landed in the Rio Grande River. The current was so strong that the plane turned over, and the two men were barely able to get out.

Parmalee left the Wright's in early 1912, and teamed up with Turpin for private flying. During an exhibition at Spokane, Washington, Parmalee had trouble with his plane. At that moment he was headed directly toward a grandstand filled with spectators. He must have realized that to try to turn his disabled plane meant a crash and probably death, but he turned anyway. The plane crashed, and Parmalee was killed.

Frank Coffyn was an instructor during his whole flying career with the Wright Company. He was sent down to the Border to teach Foulois, the Army's correspondence school pilot, to fly. After about two years of instructing, Frank Coffyn gave up his job and started flying for Robert Collier, of Collier's magazine. Most of his flying was in a seaplane in and around the New York harbor. For a time he flew a commuter's schedule for Collier between Collier's home in New Jersey and his New York office.

Coffyn made many experiments with cameras, still and movie, in his plane. And in 1913 he tested one of the first of the larger engines. While the planes he normally flew had a four-cylinder, 30-hp engine, the new one had 20 cylinders, with 200 hp. Coffyn quit the flying game for a while, but took it up again when he went into World War I.

For several years after World War I he was in the motion picture business. Then he found he just couldn't stay away from planes, and so again tied up with an airplane company, this time in New York. During World War II he learned to fly a helicopter, and is now working for a company in Redwood City which makes this type of aircraft.

The kings of the air came and went: Johnstone, Hamilton, Ely, Hoxey, Brookins—each, at some time in his career, was "tops." They all passed the scepter on to another, either because they were killed or because they stopped flying. Then came another "king" who lasted far longer than any of his predecessors. This was Lincoln Beachey. Beachey qualified for License Number 27. From the start it was apparent he was a man without nerves. He was a natural born airman and had more ideas for thrilling the crowds than any other airman.

Beachey started his air career as a balloonist. In 1907 he joined up with Capt. Tom Baldwin's dirigible team. Baldwin was a real showman. His advertisement for his airship read:

"Baldwin's California Arrow. All others copied it. Last season out of 53 starts we returned to our starting point 51 times. We have ballooned around the world twice, giving ascensions in every country that you can think of, including North and South America, Europe, Asia, (Continued on page 54)

Check On Champion

(Continued from page 50)

than the main gear, and the school mechanics have a special routine to prevent failures. Because of the chance, previously experienced, that the forward attaching bolt of the tail-wheel leaf spring assembly might snap after over-stressing in repeated hard landings, the bolt and nut are replaced at every hundred-hour inspection, even though visually it might not seem to need removal.

Another special job on the tail-wheel assembly done by the Air Facilities' men is the greasing of the wheel fork spindle via the zerk fitting every morning before flight and again at noon. This is most important on wet days to prevent possible freezing of the spindle, but it is also necessary because the mechanics have found excessive wear in the bracket assembly due to insufficient lubrication. The number of flights a training plane makes during the day is the prime reason for the twice-a-day greasing which isn't required for planes getting average use.

Next group for inspection includes the wing and tail surfaces where careless ground handling causes the most damage. The attaching points, as with the main landing gear attaching bolts, require only the periodic inspection for looseness and damage. Jury struts and other support connections are solid, but the tail wires which brace the horizontal stabilizer are open to abuse by careless handling in moving planes. The upper tail wires have been known to snap at the jam nut of the upper connecting fork and the only caution that can be listed for this is the colloquial "lay off." The wires are intended to brace the stabilizers, not careless people, and should never be used as hand grips when the plane is being moved on the ground.

A potential trouble point inside the wings is at the aileron bellcrank and bracket assembly. Flexible action of the bracket is built into the plane, but looseness of the bracket after long service is not normal. Mechanics say that sometimes the bolt and nut attaching the aileron control rod to the bellcrank has been incorrectly safetied after field maintenance and the end result has been the gradual loosening of the bolt which then comes down and fouls the bellcrank, causing a rubbing action in the aileron control. Inspection is easily made through the upper and lower inspection ports at the assembly so there is no reason why any dangerous condition should exist in this section. Ordinary care will prevent trouble when properly done.

There is one wing inspection not concerned with the wing proper that may save flight difficulties with just one quick glance. The pitot tube lines on the right wing have a flexible connection near the under surface of the wing. These connections sometimes crack after long service, leaving openings in the pitot lines, and although tape may provide a temporary fix, replacement of the connections insures against wrong instrument readings.

In general, the Aeronca *Champion* is a good plane without conspicuously recurring maintenance problems. The points listed are those that any good mechanic comes to recognize after continued work around any specific type of plane and many never appear during the life of any single plane. But just to make sure, it is always better to inspect rather

than feel sorry later. If you don't look, you can't be sure!

Common precautions and service tips are included in Aeronca service manuals and in bulletins entitled "Helps and Hints" which are issued from time to time by the manufacturer and sent to all Aeronca distributors and dealers. These bulletins also include the latest service changes recommended or ordered after engineering investigations into recurring troubles, or when better methods of service, maintenance or repair are developed. If a manufacturer's minimum recommendations are not followed, the guy who may or may not get up out of a pile of twisted wreckage has only his own carelessness to blame. A good watchword for every pilot might be, "take care of yourself, your

plane, and make sure that good mechanics are on your side."

One of the little extras not mentioned under maintenance tips is the use of extra flight equipment that helps prevent operating abuse. On the Aeronca one of them consists of an aluminum plate, available from Aeronca, which is used during winter operation in cold areas to cover the nose cowl air intake for the crankcase cooling duct to prevent excessively cool engine operation.

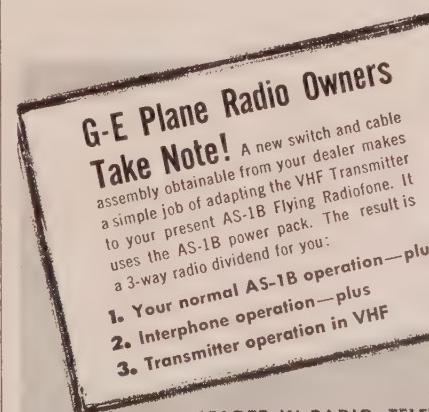
As far as Air Facilities' personnel are concerned, they like the Aeronca as they like any honest plane that doesn't sneak up on them with defects. The *Champion* is out in the open and all its troubles can be kept to a minimum—as few as engineers, pilots and mechanics are willing to let them be. ++

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The Third Ten

(Continued from page 52)

China, Japan, Australia, New Zealand, etc. Send for our booklet, 'Up in the Air'!"

After learning the why's and wherefore's of the "rubber cow" with Capt. Baldwin, Beachey started out with his own airship. In 1908 he flew down the Delaware River to drop a message to Admiral Marx aboard the U. S. Idaho. The wind was quite stiff, the airship was not very controllable, and Beachey was a one-man crew. The wind almost wrecked his ship once when it carried him just over the masts. In fact he missed them by mere inches. In order to secure fore and aft stability, Beachey had to move forward and backward. It was while doing this, and trying to maneuver to a position from which he could drop the message on the deck, that he got into trouble. However, he finally accomplished his mission successfully.

After giving exhibitions with his airship in various states and cities, Beachey's path crossed that of the Curtiss exhibition team. His mind was made up at once. His days of flying a ponderous airship were over. He immediately joined up with Curtiss.

Strange to say, Beachey was not a very apt-pupil. Glen Curtiss said he could not see how Beachey could ever get his pilot's certificate. That statement was made after he had watched Beachey during his student flying. However, Beachey soon acquired the feel of the plane, and the art of maneuvering it, and was on his way.

Starting in March, 1911, he made one sensational flight after another. His first one was a night flight over Tampa, Florida. In June he thrilled all who were interested in flying by making a flight over Niagara Falls, under the railroad bridge and over the gorge. He flew so low that his wheels almost touched the water. In August he made a new world's altitude record of 11,150 feet. When he landed after this climb, there was no gasoline in his plane. He had used all of it in making his climb. As a matter of fact, he was still climbing when his engine went dead.

During the show at Chicago in the summer of 1911, he invented new and more dangerous maneuvers with which to thrill the crowd. His accuracy in judging distance was marvelous. He was able to pull off his stunts with so narrow a margin of safety that even the old-time airmen were thrilled. His aviation career was interrupted for a while in the fall of 1911 when he killed two spectators in an accident. After that he quit flying for some time.

He soon found the urge to get back at the controls too strong to withstand, however, and was back in the pilot's seat early in 1912. His stunts were more daring than ever. While the French airman, Pegoud, was the first man to make a loop in a plane (1912), Beachey was right on his heels. From then on, there was no one who could loop as often nor with the precision that Beachey had.

Beachey was always looking for a better plane with which to stunt, and always said that some day he was going to build his own. Finally in the summer of 1913, he did. While putting it through its paces over San Francisco Bay, the plane collapsed, and Beachey



U.K. Jet Fighter

The Vickers-Supermarine Attacker is one of England's newest jet fighters. Designed to operate from carriers, the Attacker has top speed of 590, carries four cannon, two bombs

was carried to the bottom of the bay with the wreckage. So passed the last of the "Give-the-crowd-more-and-better-thrills" old-time airmen.

The first Navy officer to get a pilot's license was Lt. T. G. Ellyson. As did all airmen in those early days, Ellyson competed in as many aviation meets as he could. There was no flying pay then, and both Army and Navy airmen found it exceedingly difficult to live on their pay, especially when they were expected to appear at all of the air meets with no special allowance to meet the extra expense.

"Spud" Ellyson was more interested in developing the airplane for naval use than anything else. He was keenly interested in, and spent much time experimenting with, seaplane floats, flying boats and launching devices for planes from ships. He made the earliest flight from experimental catapults.

During World War I Ellyson, having been relieved from flying duty, commanded a destroyer unit operating against German submarines. When the armistice went into effect, Ellyson was sent with his unit to Kiel Harbor. When the Germans started to interfere with his operations, he told them he was going to carry out the mission if he had to blow the whole city to pieces. He completed his mission.

Shortly after the end of the war, Ellyson was re-detailed with the Air Service. He served at various air stations and on carriers until the spring of 1928, when he was stationed at Hampton Roads. His plane crashed on a night flight to Washington, and Ellyson was killed.

Ellyson was one of those early Naval flyers who did so much to make flying practical for naval operations.

Numbers 29 and 30 of the Pilot's Licenses were awarded to Lieutenants H. H. Arnold and T. DeWitt Milling, respectively. Arnold came into the air arm from the Infantry, and Milling from the Cavalry. Both arrived at Sims Station for flying training at the same time. Sims Station was about seven miles out of Dayton, and was located where Fairfield Air Depot now stands. There it was that the Wright's conducted most of their early experiments after their first flights at Kitty Hawk. At the Wright School in April, 1911, were also Lt. John Rogers, U.S.N., who was just completing his flying training, and his cousin, C. P. Rogers. Those two men received flying licenses Numbers 48 and 49. C. P. Rogers afterwards became famous for making the first transcontinental flight from New York to Long Beach, California. He was killed while making a flight near the latter place a few weeks afterward.

The Wright's went about teaching their

pupils the control-stick actions very systematically. They had a plane balanced so that it could rock its wings up and down. The lateral control stick was hooked up so that its back-and-forth movement caused fingers to grasp a belt moving up and down between pulleys. The belt was driven by an electric motor. This instruction of the lateral control was most important as its movement was not, in any way, a natural one, and the students had to make the proper motions instinctively. So, hour after hour, the students would sit in the plane seat rocking the wings up and down, and correcting the motions by the proper stick action.

Orville and Wilbur Wright were always very, very willing to talk about flying, about airplanes, wind currents and causes of accidents. Both Milling and Arnold were always eager to get all the advice and information they could get from any source whatsoever.

The flying instruction was quite sketchy. Milling soloed in about two hours—as a matter of fact, it was less than two hours. Arnold soloed in a trifle over two hours. From then on they were on their own, and had to learn either the hard way—from their own mistakes, or from the experiences and mistakes of others.

Like all other airmen, they participated in aviation meets and exhibition flights. Milling soon became one of the country's foremost airmen. He won the tri-state race at the Boston meet in 1911, and was one of the very few airmen who could fly equally well with both the Curtiss and the Wright controls.

Arnold flew in two of the earliest motion pictures, and won the Mackay Trophy, given in 1912 for competition among Army airmen. Incidentally, he won it again in 1934.

Both Milling and Arnold served in World Wars I and II. Both are very much alive today. Milling has Expert Aviator's Certificate Number 3, and Arnold has Number 4.

The Aero Club of America has long since passed out of existence. Most of the old-timers have passed away, too, but every so often a few make their appearance. Few people, however, realize the part they played in making it possible for aviation to take its place as an accepted form of transportation for the traveling public, and as a powerful war weapon. No two of them had the same characteristics; no two of them would describe an aerial maneuver the same way. Many times they would argue for hours as to the proper way to do a particular stunt in the air, but fundamentally, they all flew alike. They were the men who changed the airplane from a device for giving thrills to crowds, to a practical instrument of transportation.

Hunters Fly High

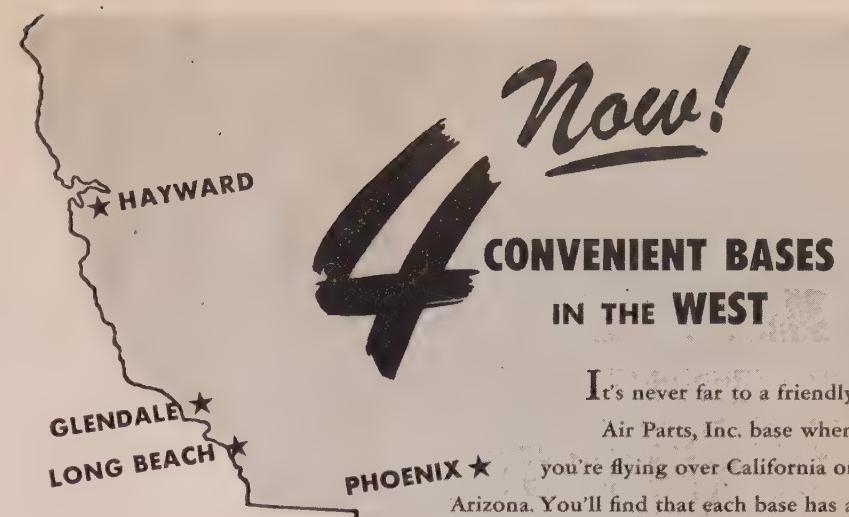
(Continued from page 39)

inviting bass fishing grounds, but where was that danged runway? Marked with rocks? What rocks? Why, man, the whole thing was full of rocks—big 'uns!

We circled and made a simulated landing, took off again, circled again, and the more we looked below, the more jagged appeared the rocks, the sharper the burned out stumps. Our T-craft was a rented airplane and we had to be careful of her. Besides, she was a battle-scarred veteran that demanded careful handling not to become temperamental. One more loop—and we landed—hot. The red-and-black plane bounced on the rocks like a football, swishing between scraggly scrub oak and sharp jutting stumps. For a few seconds we thought it was goodby to the cloth-covered wings. Our chest and stomach muscles tightened instinctively, bracing for an encounter with some sharp object. Things were happening too fast, and the right brake was not working. Then a couple more frenzied leaps, and we settled, uncomfortably, on a lesser pile of rocks than those we had already gone over. The Schumakers came on the dead run. They helped us turn and taxi back to what was to be a lineup.

The rest of the party landed without mishap. They were Harry Behn, a writer, naturalist, geologist; Orlando Miller, an ex-GI Ferry-Command pilot, and his wife Helene; the Schumakers, photography and flying nuts, and the two of us. Plaid blankets were spread and coffee and sandwiches hauled out, but no one wanted the food before trying out their fishing luck. As if by magic, fishing tackle appeared, and each man went to his own special fishing spot along the lake. Each intended to land a bass of which there was no whicker. Helene, Harry, and I went looking for pieces of ancient Indian pottery and arrowheads. The whole area near the Roosevelt is full of prehistoric Indian caves and burying grounds. Our planes were lined up near a big mound that looked like one of them. We picked up quite a few pieces of chipped Indian flint, and some handsome, handpainted chips of Indian pottery. Foot tracks showed us that someone had been there before us, and that accounted for the scarcity of arrowheads. When the boys returned from the lake, their noses were dragging the ground. To pick up their drooping spirits it was decided not to tarry on the lake, but to take off for Prescott immediately. The boys knelt down around a map and charted the course. We were to fly straight north, across Four Peaks, swing up Black Canyon, around "Anxiety" mountain and into Prescott. No one knows what the real name of Anxiety Mountain is, but local flyers call it that because of its height and the violent turbulence usually present near it. In the last moment, when the rest of the party was already in the air, we discovered that our battered Pegasus was nearly out of gas. There was nothing left to do but to turn tail and fly back to Mesa for refueling. Again we flew the shortcut, but by the time we were over the even green quadrangles of Mesa's orchards and well-irrigated fields, the gas indicator showed zero. Though two Army fields were right

(Continued on page 57)



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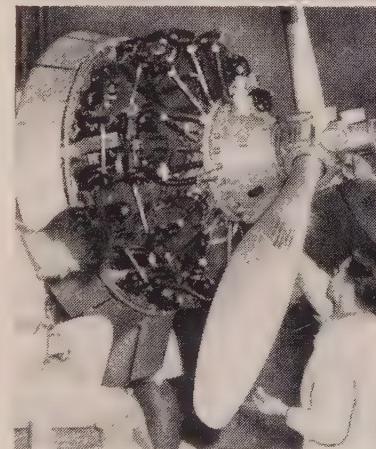
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Fly The Family

(Continued from page 33)

radio, it's a valuable item. But if you don't know the hows of radio usage, don't plan to learn how on a trip such as this.

From coast-to-coast may sound like a big chunk of flying but not the way we did it. This was strictly a pleasure trip and that's exactly the way we flew it—flying amounted to something like three hours each day. Yet we accomplished an equivalent of 8 or 10 hours driving distance—and with about a quarter of the fatigue.

We flew when we wanted to and for as long as we wanted to. We maintained no predetermined schedule. I'm certain that was one factor in keeping the trip on the fun side instead of the chore side. Everyone's comfort including the pilot's was considered. On the way west, we flew only in the morning, since it was not pleasant having to sit in the front cockpit, face into the sun, for two or three hours. However, that wasn't the only reason we flew in the morning—the air was smoother at that time of day. It was cooler too. At the higher altitudes around the mountains where the air isn't cool—it's cold—the excellent heater in the cabin and the fact that the boys wore sweaters allowed us to have open windows and still maintain a moderate temperature—all the comforts of home with an added attraction: fresh mountain air.

One other important thing for the family-man pilot to remember is the inborn fidgetiness of children. It's a cinch my two young Indians aren't any different from any other

two. They have the vitality of Superman, and the vim and vigor of fighting marlins. Keeping them cooped up even for a couple of hours in the cabin of a plane is like holding your thumb over the top of a bottle of seltzer and then shaking it. Brother, do they store up energy that wants to explode! As a safety valve for that, when we'd land at an airport, Sena would take the kids off the edge of the field . . . and let loose the reins. While I was having the ship gassed up, checked or what have you, the two kids were out chasing each other all over some empty field or parking lot, getting rid of all that stored up energy that kids manufacture in great quantities. By the time my chores were finished, the kids were exhausted, and Sena'd herd them back to the plane. With them safely seated in back with their mother . . . and all under one safety belt . . . I'd put the *Cruiser's* starter to work and off we'd go.

As far as expenses are concerned the plane we used operated at less cost per mile than a car. We averaged but 1.93 cents a mile. I kept the ship inspected myself and the engine was a quiet and dependable one. At one point on the journey the engine slowed down so I landed at the nearest airport. Inspection disclosed fuzz on the screen in the carburetor—the airport refueling hose had probably been wearing out letting the fuzz into the fuel. This might have been an embarrassing forced landing, but we always played safe anyway by choosing a route that kept us within gliding distance of a road or cultivated field. I've never had a forced landing. In the first place I plan to keep everything in my favor—everything includes altitude (plenty of it), good maintenance,

and the best terrain within choice.

Finally, there's "trip advice." I get it from the weather man, from the people who know the terrain I'm flying over and from local airport managers who might know the condition of the airports I'm heading for.

Pride really goes before the fall in flying—my strong recommendation to anyone flying over mountains for the first time is that you be sure to stop and get local advice before you begin your trip over them. And I don't mean a scant five or 10 minutes' chat. Spend several hours in a bull session picking up flying tips—and when changing mountain ranges, believe it or not, you're ready for more advice. So touch down at the nearest field and ask some more questions. The more questions you ask, the more answers you'll get—and it's swell to know the answers when you need them.

There's nothing like good weather for a good vacation, especially if you're flying, so be a little more sure by choosing a time of the year that offers the best in weather. The forecaster in your local weather bureau can help you plan your trip that way.

Also on the subject of trip planning—there's a great deal more to it than just the week or weeks before you start. It goes right on until you get back. It's usually best to plan to stop overnight at an Airways airport, or on a field in contact with airways communications. Then before you take off the next morning you can check the weather. On the subject of weather, anyone serious about doing the right thing will heed what he learns about the intentions of the elements. When traveling west you're meeting the weather so it isn't so important—since it soon passes over. You can land when you see that murkiness ahead of you and wait until it passes before you take off again. Usually this means a delay of only a few hours. But coming east, if the weather gets worse as you fly along, you might as well stop off and wait a while. It means you're catching up with the bad stuff and probably would be riding along with it if you continued the trip.

One thing I've always found to pay off is paying a great deal of attention to the altitude at which I fly. It is determined by several factors, mostly terrain. But another determining factor is favorable wind. We flew anywhere from 2,000 to 11,000 feet, but preferred six to 8,000 for a favorable airspeed whenever possible. We cruised at 110 mph true airspeed at most altitudes.

In choosing your altitude, check winds at different levels and then fly the altitude that's most in your favor. Study the direction of cloud shadows moving across fences, lakes or other identifiable landmarks on the ground. Next, find the surface wind's direction from smoke or ripples on ponds, windmills, etc. Then choose your altitude. If you don't think winds are important take the ease of the plane that left on transoceanic Atlantic hop one hour and a half ahead of another plane—yet the second plane arrived an hour and a half ahead of the one that took off first.

And so it goes for air-tripping with your family. I guess just any day now the family will be going out to the halltree to collect their wraps and take off on another trip. I can tell that it's coming—the kids are being quiet and angelic—and my wife is polishing up the old suitcase. Oh well—hand me those maps, please.

SOME DIFFERENCE in size between Capt. Scanlon's Super Cruiser and Boeing's new Stratocruiser. Scanlon's trip included stop off to see the newest in air transports



Hunters Fly High

(Continued from page 55)

close by, we considered the rigmarole that such landings entail, decided against it and kept churning on, hoping to make it to Mesa. When we finally did, the attendant shook his head and puffed out his cheeks in incredulous wonder as he came to fill our very dry tank.

En route again, we hurried as much as we could without going over the T-craft's 131-mph cruising limit. We flew over deceptively round pleats of mountains, and as we progressed they got yellower and more naked until they were just tremendous piles of sandstone and reddish lava beds. Scars of mines and prospector diggings and an occasional muddy waterhole were all that cheered up the bleak landscape.

Though mountains here seemed wide apart, we began to be rocked by strong crosswinds, each gust trying to blow us off course. The up-and-down drafts were so strong we seemed to be making no progress at all, just churning up and down and sideways in this strange turbulence. After a while, the crosswind gave way to a continual up-and-down draft until it was like being on a giant teeter-totter.

As we looked down, we speculated what this place looked like before the dinosaurs tyrannosaurus, and other predawn monsters were driven into oblivion by the volcanic activity. That it was pretty violent was witnessed by the story written on the landscape. It looked as if several volcanoes had been there, spewing lava, when something suddenly stopped the show. Now the terrain looks like a bubbling hot pudding that over-ran its pan and then suddenly froze up. If the pudding was apricot, you about get the color, too.

By the time we'd put in an appearance, the rest of the party had been cooling its heels at the Prescott airport for an hour.

Soon Wayland Potter arrived with his wife, and all his hunting dogs. Since there were too many of us for his truck, he had commandeered two sedans from relatives and neighbors to haul us first to a hotel to clean up, eat, and next—coon-huntin'.

We ate a solid steak dinner; but had we known what was in the offing, each one of us would have put away two. Then we piled into the cars and jogged along a dusty highway to the mysterious spot on the banks of the half-dried-up Hassayampa where the coons like to roam.

To dwarf a bumpy 40-mile journey, we drove up hill and down dale, choking on alkali dust, and closing our eyes on hairpin turns which Wayland and Jim Bryan, a former bronco-buster, took on two wheels with complete and trusting unconcern. Finally a gnarled oak tree and big rock, overhung with mistletoe, were a signal for a stop. We stretched our legs and adjusted our flashlights. By that time it was nearly 8 P.M. and pitch dark. But where were the horses, someone asked plaintively. "Horses, Ma'm?" Jim Bryan laughed. "There can be no horses in this kind of trail. They'd break a leg tryin' to follow a coon!"

Bryan was not exaggerating. Our first lap was a slide down nearly a vertical embankment to the little trickle of a stream chocked with boulders and arrow weed, under a bridge. The slope was plenty steep

and covered with slithery dust. I think Wayland selected it on purpose, because it made us all so dirty, nothing else seemed to matter right then and there. Our eyes and shoes and trousers were full of dust.

The dogs were out of the truck by that time and were working the stream up and down, silently. Their noses close to the ground they were "casting the track," still-hunting. They were fine bear and lion dogs—mixtures of Redbone, Plott, and Bluetick. Used to much rougher game and terrain, they took this hunt as a kind of foolish game. Nevertheless, one could see that they were enjoying themselves. But if it was play to them, it certainly turned out to be work to us. For three miles we jumped from one bank to another, crawled

under barbed-wire fences, changed flashlight batteries, winced from whipping arrow weeds that lashed at us as we brushed past, mashed across the creek rather than go across on slithery logs, and tore through prickly bushes.

After four miles there was grumbling. The night was too dark. Our shoes were too wet and full of sand. Someone had heard that the coons never came out except on a full-moon night, and there was no moon. Wayland just smiled and trudged on. At the five-mile mark most of us were badly scratched by thorns and definitely hamstrung. Half of the "hunters" wanted to light a fire and rest. Graciously our host and guide consented. Never before

(Continued on page 59)



World's First Jet Flying Boat



ENGLAND'S Saunders-Roe Aircraft recently announced the SR/A1, a twin-jet, single-seater flying boat fighter. Powered by two axial-flow turbo-jets, the Metropolitan-Vickers F.2/4 *Beryls*, the SR/A1 has a speed of over 400 mph. Each jet produces 3,500 pounds static thrust at take-off, and both jet units take in air through the single large aperture intake in the bow. It is armed with four cannons. Other details regarding this twin-jet fighter must remain secret at this time, according to the British.

Basic Flight

(Continued from page 35)

dition without help from the pilot. Almost all lightplanes are inherently stable; they are designed and built for stability.

Straight-and-Level Flight

The greater part of your flying, once you have your license, will probably be straight-and-level flight. SLF may be compared to posture; both have far-reaching effects, the one on good flying, the other on good health. In both, good habits will cut down fatigue, and good habits are easier to learn than bad ones to unlearn.

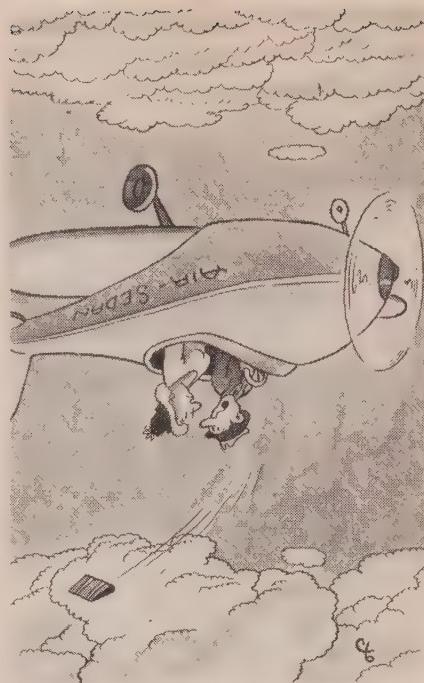
In reasonably smooth air, with the proper power setting and in an airplane that is well-rigged and correctly trimmed, SLF is the art of letting the controls alone. The airplane can fly itself better than you can. Without hand and foot pressures, its controls streamline themselves. In turbulence, the art is one of control and throttle coordination, anticipation of the airplane's response to "bumps," and timing and shading of the correct control pressures. You can't help bouncing around, but you can maintain a constant attitude and heading and keep your altitude within reasonable limits of variation above or below that desired. Equally to be avoided are fighting the bumps, which sets up tension, and letting the gusts fly you, which leads to feelings of inferiority.

When you were a baby, you learned to walk by interpreting and correlating the evidence supplied by your eyes, your muscles (kinesthesia again) and the tiny liquid-filled semi-circular canals in your ears, which operate on the same principle as a carpenter's level. You use these same senses in learning to fly. At first vision is the only reliable check and even it is used mechanically; other senses must be consciously developed and applied to flying.

To hold your altitude you maintain a certain constant relationship between a point on the nose of your airplane and the horizon. You glance from one wingtip to another to make sure they're equidistant above (or below) the horizon. A point straight ahead on the horizon serves as a bullseye that keeps you on your heading. By using all these mechanical checks you develop your full range of vision (almost a hemisphere can be seen by the normal pair of eyes gazing straight ahead) and the swivel neck so fashionable among the airborne. Eyes fixed on one spot cannot detect the droop of a wingtip or gradual yawing; besides, it is a habit that leads to tension, fatigue and seeing flying saucers. It is important to sit comfortably and avoid shifting around, which changes your line of sight on the various reference points. Learn to ride with the airplane; don't lean away from the turns.

One day you'll realize that your brain has synthesized these mechanical aids into a consciousness of being level. You'll always use the visual reference points in contact flying, but you won't have to think about them any more than you think about keeping your balance while on a stroll through the park.

For reasons of comfort and efficiency, corrections should be made by coordinated pressures—aileron and rudder together to raise a low wing or return to a heading. In rough



LAMB
"That's funny . . . my wallet just sailed past my nose!"

air it is very often necessary to use your throttle in coordination with the elevators to maintain a given altitude.

Turns

A turn is a coordinated maneuver which results in a change in the direction of flight on the horizontal plane.

It is possible to turn by using the rudder alone or the ailerons alone, but only the coordinated turn is precise and fully controlled. The elevators have a function in turns, and so does the throttle in steep turns. Generally speaking, steep turns are those in which the airplane is banked 55° to 70° (more if your ship will do it); medium turns include banks from 30° to 55° and gentle turns, banks up to 30°.

Starting from straight-and-level with controls neutral, throttle at cruising and stabilizer properly trimmed, the entry is accomplished by smooth coordination of aileron and rudder pressures and blending in of elevator pressure and throttle as needed. Although rudder and aileron pressures are begun simultaneously, they are not equal to each other in all planes, nor is their relationship constant in one ship at varying speeds. The idea is that the nose should begin to swing as the plane begins to bank. Pressures should be built up smoothly. Just before the desired degree of bank and rate of turn are established, rudder and aileron pressures are gradually relaxed and ailerons returned to neutral. In returning them, you are actually exerting little or no pressure, as they tend to streamline themselves when pressure is relaxed. The purpose is dual; to maintain positive control of the turn and to have stick and rudder in proper position from which to make corrections or begin the recovery.

The airplane is now turning, and if you compensate for any disturbing forces, it will continue to turn at a constant rate until you alter its attitude.

There are several forces to be considered. *Torque* is the tendency of the airplane to rotate, with respect to the longitudinal axis,

induced by and in a direction opposite to the rotation of the propeller. The majority of aircraft propellers rotate clockwise as seen from the cockpit, and thus torque is a twisting tendency to the left, or counter-clockwise. Today's airplanes are rigged so that torque is counterbalanced in straight-and-level flight. When speed, attitude or power setting is altered, torque increases (or decreases) and a correction must be made. In level turns, more torque is present than in straight flight; in relation to the steepness of the bank, more rudder pressure is needed in entering a right turn than a left turn.

Effective lift *decreases* in a turn, also in proportion to the bank used. In straight-and-level flight, the pull of lift is directly, and therefore entirely, opposed to the pull of gravity; as the wings are banked, lift (always perpendicular to the lifting surface) no longer exerts its whole force against gravity. In a true vertical bank, lift is at a 90° angle to gravity. Also, in entering the turn, the vertical axis of the ship is inclined, and the rudder will tend to swing the nose down (toward the earth) as long as it is deflected into the turn. Against these two effects, elevator pressure must be applied and held in order to maintain altitude. In gentle banks, the use of the elevators is wholly for this purpose; however, in a steep bank, they are needed principally to maintain centrifugal force (or overcome the loss of lift, as you like) and to help determine the radius of the turn.

This action of the elevators requires *additional power*, which is obtained in gentle and medium-gentle banks by sacrificing some speed. In steeper banks, this compensation is insufficient, and the throttle setting must be increased.

Overbanking tendency is theoretically strongest in a 45° bank and must be corrected by holding a little top aileron pressure in the turn. It results from the speed differential between left and right wings. The higher or outside wing travels a larger circle than the lower and therefore travels faster and produces more lift. This effect fades to nothing in very steep or very shallow turns; in the latter, in fact, it is necessary to combat the stability of the airplane which will attempt to return it to level flight.

In most turns, two or more of these forces will be operating. They may act together or cancel each other out partially or wholly. It is enough to understand them and to correct smoothly any distortion of the turn.

In the recovery of the turn, which is in effect a bank back to level flight, these forces act in reverse. In addition, a more positive rudder pressure must be used than in the entry, against the centrifugal force which has been acting throughout the turn. Forward stick pressure is used to keep the nose in its horizontal plane as effective lift is regained and any extra power which has been applied is decreased smoothly.

Think of a turn as a perfect circle or a segment of that circle. Excessive use of rudder in the entry will cause the airplane to skid away from the center of the circle, while too much aileron (or opposite rudder) will result in slipping, and accompanying loss of altitude. At a given airspeed the radius of the circle and the time required to complete it will depend on the degree of bank.

(Continued on page 64)

Hunters Fly High

(Continued from page 57)

did I see such alacrity as was displayed in dragging logs and branches to make a fire. As usual, "One-Match" Schumaker scored by lighting it without any trouble and soon we were sitting around a cheery blaze. No one knew whence, but a bottle of cheer appeared and made the rounds.

The fireside relaxation came to an abrupt end when Wayland got out a battered brass horn and called the dogs. From now on we were hunting in earnest.

By 2 AM several people returned to the car to sleep and rest, and only four stayed on with the dogs. Finally two remained by the creek to tend the fire, while Wayland and the dogs took off across a canyon which he assured us was full of coons. If the dogs bayed one, he promised to use the horn and thus let us know that we were to hurry there with gun and camera.

The watches ticked on and the night grew colder. At 4 AM our backs began to ache and our eyes felt full of sand. Still no sound of Wayland's horn. A strong wind blew up. We came to the conclusion that the coons simply did not like us or had gone off somewhere on an errand. It was decided to bring Wayland back to camp by signaling to him with flashlights in Morse code. We signaled till the batteries gave out. Finally we saw an answering gleam and after half an hour more Wayland appeared, wet, tired, his hunting cap awry. But still he was not giving up. The dogs were with him, and one of them, Sue, began to bawl. She was on the track. Soon the rest of them took up the cry, and this time the chase was on. We stumbled over crags and slippery wet stones, fell on bunches of rotten leaves, leaped over or crawled under barbed wire, circled, caught our toes on gnarled roots, picked ourselves up again, bumped into each other as our flashlights gave out. During the last lap Potter got in the lead, and overtook the dogs as they were making tries to climb the leaning branches of an old dead tree atop which a frightened coon sat crouched, spitting and snarling. He was too young to kill, Potter decided, and so did we, but pictures were in order.

After that nothing more was left but jogging along the dark highway back to the car and the rest of the company. In the morning all but two planes took off early. The Funk with the Miller stayed to give us convoy across the ridges, for they were as fidgety about our temperamental conveyance as we were. But for all their good intentions things—as usual—did not work out as planned. They flew a lot higher, at about 13,000, and we struggled for a while at 7,000, and eventually at 8,000 where we got a terrific tail wind that blew us ahead like a kite. We ended us by losing the Funk, but arriving in Phoenix about the same time it did. Over lunch there we remembered the coon. "Remember that rancher who came out and hailed us as we walked along the creek?" Orlando laughed. "There was a guy after my own heart!" We all had to laugh because we knew exactly what Orlando meant. When asked if he cared to join us, that fellow had answered: "Don't care for walkin' that much, but thanks just the same."



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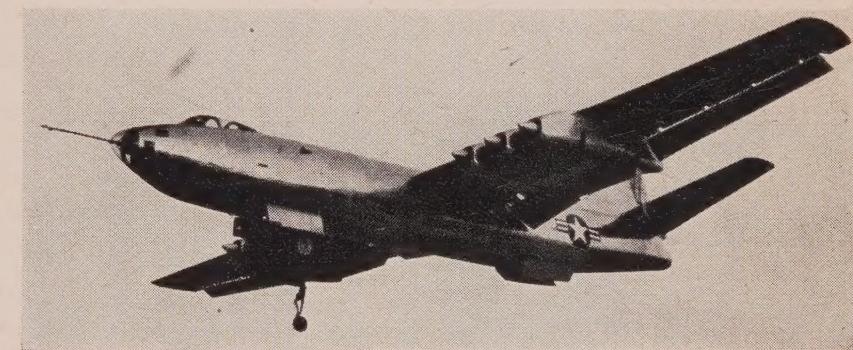
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NEW MARTIN BOMBER

AAF's first six-jet bomber, Martin XB-48, recently made its first flight. Powered by GE jet engines, the XB-48 has a speed reported to be "over 480 mph," 10-ton bomb load.

FLYING SPORTSMAN and **SKYWAYS**



PICTURE CREDITS

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AERONCA; 36, 37—GROENHOFF, ACME, CESSNA, AERONCA,
INS; 40, 41, 42—LEVY; 43—GOODYEAR; 46—LUSCOMBE;
48—LOCKHEED; 54—FLIGHT; 57—ACME, BRITISH COM-
BINE; 59—MARTIN

Dilbert

(Continued from page 45)

or steering? Flying is just one more complicated stage in this evolution of locomotion. Since it, too, is mainly a question of mind over matter, any person with normal faculties can learn to fly.

Naturally, you should learn to taxi first, but we will pick up that important maneuver next time. So make yourself comfortable in the cockpit. Fasten your safety belt. Adjust



"They're off . . .!"

your seat so you can see and still get full throw of the rudder pedals. Now place your hands and feet lightly on the controls and "follow through" as I taxi out and climb to altitude.

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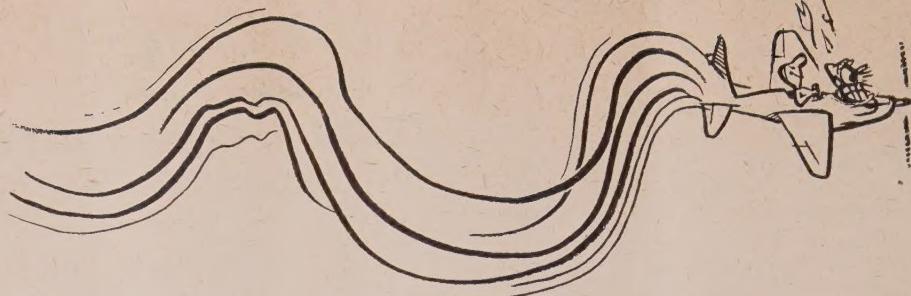
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Not rocky road to Dublin but Dilbert's straight-and-level

Relax! Relax! Keep your mind alert, but force that muscular tension out of your body. Look around and try to sense the feel of things. We'll just fly around awhile and review some of our flight indoctrination.

There are only three fundamental flight maneuvers: the climb, the glide and the turn. Straight-and-level flight and all acrobatic flying are merely coordinated combinations of these three basic maneuvers.

Aside from the engine which pulls you along, you have three sets of controls with which to regulate the attitude of your plane: ailerons, elevators (flippers) and rudder. Cables from two of these are attached to the stick, while the rudder cables lead to the rudder pedals.

Movement of the flippers is controlled by fore and aft pressure on the stick. Push the stick away from you and you also push the nose of the plane away from you, toward your feet. You can't say, "toward the ground" or "down" because pushing the stick away from you when the plane is on its back will push the nose *up*, or away from the ground. The opposite movement, pulling the stick toward you, always pulls the nose of the plane toward your head.

All right, try out these maneuvers; first dive, then level off, then climb. Check your safety belt again. Note I wiggle the stick and throw up my hands. She's yours.

No! No! NO! Not an outside loop! You don't have to choke the stick to death and jam it forward with all your strength. Just a gentle forward pressure. Lucky thing you had your safety belt fastened or you would have pulled a Dilbert and thrown yourself clear out of the plane.

Hold the stick lightly between the thumb and fingers of the right hand and try it again. She's yours. Easy does it. That's fine; a little more. Now ease her back to level. Hold it. Now pull her up into a gentle climb. Back down again.

Next the ailerons which are attached to the side of the stick. Pushing the stick to the right lowers the right wing away from you and raises the left wing toward you. Pressure on the stick to the left produces the opposite result. Remember, this doesn't turn the plane; merely banks it to keep from skidding when the plane does turn.

You try it—but easy. First, pressure to the right. Fine. Now left pressure, back to level flight. Keep it on and bank to the left. Are you sitting so unaxed in the cockpit that you can feel yourself being pushed to the right? Don't worry, you will begin to feel it when you relax after a few more flights.

This leaves only the rudder. Pressure on the rudder pedals causes the nose of the plane to swing in the direction of the pressure. Right rudder turns the nose toward the right wing and vice versa. If this seems just

the opposite of what it should be make a number of imaginary turns in bed tonight; it will soon seem natural. In fact, you very profitably might do some bunk flying with all these controls. During your entire aviation career, their reactions hold true, no matter what the position of the plane. Only after you learn to handle them automatically will you be able to devote the necessary attention to the many other important aspects of flying.

Straight And Level—The plane is in straight-and-level flight now. Let's see if you can hold her there. Correct for any deviations as you have just learned; rudder for turns and stick for banks and nose up or down. She's yours.

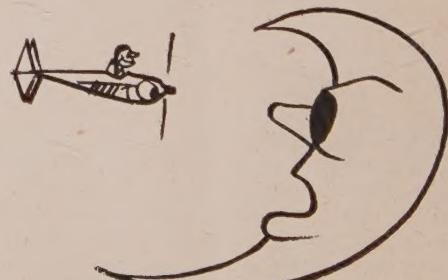
While we are level, note the position of the nose of the plane relative to the horizon. Pick some part of the cowling or engine which is right on the horizon and use it as a reference point. When it goes above the horizon, you are climbing; when it goes below, diving. Now look way out in the distance and pick out a landmark on your line of flight. Keep the plane headed for this and you will be flying in a straight line. Next, look out both sides of the plane and see that the wing tips are the same distance from the horizons. This indicates that your wings are level.

The plane is yours again. Try this straight-and-level maneuver once more. See if you can detect small changes in the attitude of the plane and correct them with very slight, short pressures on the controls. There, that's much better. I think you have the idea. Before you lose it, let's head for the barn.

Measured in nervous energy expended, you've done a day's work; watch time, just 30 minutes. As you become more at home up here, you will relax and it will come easier. My guess is you'll be ready for solo after about eight hours dual. I say "dual" because if you are at all normal, you will do enough mental flying before your next lesson to make a trip to the moon—straight and level all the way.

+ + +

Straight-and-level all the way



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Basic Flight

(Continued from page 58)

Climbs

A normal climb is one at an angle and speed which give the greatest rate of ascent possible at cruising RPM. In entering a climb from level flight, it is necessary to coordinate back stick pressure with the advance of the throttle so as to keep RPM as nearly constant as possible and to reduce speed smoothly. During this process, torque becomes apparent and right rudder pressure must be faded in and held throughout the climb. Once the proper combination of attitude and power is established, the climb and airspeed will remain at the desired constant rate. Any attempt to increase the rate of climb by using a greater angle of attack without more power will only result in a less efficient climb. Carried further, this error will result in mushing, conspicuous for sloppiness of control reaction, or even a stall. On the other hand, climbing at too shallow an angle gives a higher forward speed than needed and a lower rate of ascent. In other words, for the proper power setting there is only one angle of attack which will produce the one optimum rate of climb.

A maximum climb is one at full power and at the angle of attack to give optimum climb.

Climbs are important not only *per se* but as the basis for advanced and acrobatic maneuvers. A further benefit from their practice is a sense of the proper coordination of speed, power and altitude, which will apply in all flying.

Forward elevator pressure begins the return to SLF, and the throttle is retarded as necessary to maintain desired RPM. Right rudder pressure is gradually released as speed picks up and torque decreases.

Climbing turns. In order to maintain a constant rate of climb, a constant rate of turn and a constant bank in a climbing turn, all controls must be coordinated.

Because lift and speed are less in a turn, the rate of climb will be lower than in a straight climb. Also, there will be a more appreciable nose-heaviness. In practicing, it is well to assume a conservative climb, then enter a turn. Any mistakes can thus be corrected one at a time. Later, you can enter a climbing turn directly from level flight. This approach will also help you learn to distribute your attention properly after you pass the mechanical stage. As you gain proficiency, try different combinations of rates of climb and angles of bank until you can perform any climb turn smoothly and precisely.

Among bad habits to watch for, the most dangerous is skidding. If skidding prolonged in a steep climb, it will cause a spin—even in a hard-to-spin airplane. Slipping and letting the nose wander in the entry or recovery are also to be avoided.

Glides

A normal glide is performed power-off, at an angle which will enable the airplane to cover the greatest horizontal distance with a minimum loss of altitude. Only experimenting will determine the best gliding angle of an airplane, as even two ships of the same model may differ in this respect.

To enter a normal glide from straight-and-level flight, the throttle is closed and the

level attitude maintained until speed drops off. Back pressure is relaxed sufficiently to allow the airplane to assume the desired angle just as gliding speed is reached. Due to the decrease of torque, the airplane tends to turn to the right, and left rudder pressure must be applied as needed and held throughout the glide.

Gliding at too flat an angle causes mushing, with a greatly increased rate of descent, even if you avoid a stall. Mushing can be detected readily by the sluggishness of controls and the extra pressure required to hold the nose up; there is also a definite sensation of "falling through." Without power the pilot cannot have complete control of the airplane when his gliding speed is below normal.

Too steep a glide will result in coasting a great distance when one returns to level flight, with particularly bad effects in approaching for a landing, as all accuracy is destroyed.

(Editor's note: Don't forget to clear the engine at intervals during the glide by advancing the throttle smoothly to cruising and then closing it again.)

In contrast to the recovery from a climb, the change from glide to SLF is begun by advancing the throttle. As airspeed increases, resistance against back stick pressure relaxes. Throttle and stick should be handled so that change of attitude and increase in airspeed are constant, smooth and coordinated. Left rudder pressure is tapered off so that the nose is held straight.

Gliding turns. The success of a landing is dependent on gliding and gliding turns; their importance can hardly be exaggerated. They should be performed with little conscious effort, since traffic and planning of the approach and landing require the full attention of the pilot.

More back pressure on the stick is required than in a straight glide because of decreased lift and speed, and the tendency of a stable airplane to nose down when power is cut. In the recovery the nose will tend to come up too high and much speed will be lost if this back pressure is relaxed too slowly or not enough.

Since airspeed is at a minimum (for safety) in a glide, it cannot be lowered further, as in a level turn, to make up for the action of the elevators. Instead, altitude must be sacrificed. In other words, a steeper glide angle is used in a turn than in a straight glide (in proportion to the degree of bank) to maintain a safe speed.

The same faults must be guarded against as in climbing turns, and again skidding is the most dangerous of them, particularly close to the ground.

Control pressures necessary will be lighter than in turns with power, since there is little or no resistance from the slipstream. This means that you need not "anticipate" so much in the recovery. In fact, most students tend to recover from the final turn too soon, thus upsetting their plans for a perfect approach and landing.

It may seem that we have brought you a long way from your troublesome Lazy 8's. However, these basic parts of flying contain all the elements of more complex maneuvers. An elusive error in a *Chandelle* is more easily detected in a climb. An hour or two of self-discipline on these fundamentals is an investment that will pay off in many hours of good flying.